

MONTHLY BULLETIN

CALIFORNIA STATE BOARD OF HEALTH

Devoted to the Prevention of Sickness and Death

Entered as second-class matter, August 15, 1905, at the post office at Sacramento, California, under the Act of Congress of July 16, 1894.

Sent free, on request, to any citizen of California

WILBUR A. SAWYER, M.D., Secretary and Executive Officer	Editor
GUY P. JONES, Morbidity Statistician	Associate Editor

When an epidemic is starting in your town does the health officer busy himself investigating the source of infection and controlling it, calling on the State Board of Health for assistance if necessary; or does he devote such little time as may be spared from private practice to consulting business interests and issuing bulletins that there is "No Cause for Alarm"? Perhaps your child and a dozen others are already sick and more cases are appearing daily, and perhaps the community is obviously without competent public health supervision, and perhaps no one knows where the infection is coming from, but you will doubtless be reassured by the assertion that there is "no cause for alarm."

★ ★ ★ ★ ★

A small boy recently carried smallpox into a California school and infected four playmates, one of whom gave the disease to a teacher in another town. When the disease had been traced to its source, the boy's grandmother told the representative of the State Board of Health, "I noticed the rash but I did not tell any one because I thought somebody would think it was catching and would keep him out of school." How long will it be before parents will insist on medical school inspection to protect their children against the results of such ignorance and selfishness?

★ ★ ★ ★ ★

Depriving vaccinated children of the privileges of school attendance, when smallpox is present in the community, can not be justified on grounds of health protection. School trustees who close schools because of smallpox do so contrary to the intent of the State Vaccination Law and contrary to the directions of the State Board of Health. Sometimes they seem to be under the dominance of anti-vaccinationists who wish to deprive the vaccinated of the privileges which their children can not with safety be allowed to enjoy. Local health officers are hereby again warned to see that certificates of vaccination or "conscientious scrup-

ples" are filed, as required by law, so that the legal machinery of smallpox control can be quickly put into operation when the disease makes its appearance. Read what Mr. Hyatt, State Superintendent of Public Instruction, says in this issue of the Monthly Bulletin about the responsibility of school trustees for closing schools contrary to the advice of the health authorities. If your vaccinated child is kept out of school on account of the presence of smallpox, notify the State Board of Health.

★ ★ ★ ★ ★

Tuberculosis is one of the biggest problems in public health that California has to deal with. Not only do we have our own cases, but we have thousands of cases from other states, many of which are in persons whose funds are exhausted, requiring the expenditure of large amounts of public money. It is impossible to trace the origin of all cases, and it would be inhuman not to provide care for these unfortunates, from wherever they may have come. The proposed granting of a Federal subsidy, providing for their care in part, is of vital interest not only to California, but to many other states having the same problem. In no other way can aid in lifting this great financial burden be given.

★ ★ ★ ★ ★

The superstitions of the dark ages have not infrequently been revived as late as the famous year of the Panama-Pacific International Exposition. The following extract is from a paper in one of our important cities: "Since several cases of diphtheria have been reported, the school trustees have advised the parents to hang a small bag of camphor about the children's necks to guard them from infection by the dread disease." Why not make doubly sure by recommending also a bag of asafoetida for the neck, a potato and a horse chestnut for the pocket, a woolen string for the ankle, sulphur for the shoes, red flannel for the chest, and some kind of herb tea for the stomach? Then if the epidemic continued to spread the trustees might ask the health officer to take charge and stop the epidemic abruptly by taking cultures and isolating the carriers. In some places they do this at the beginning.

★ ★ ★ ★ ★

Mr. Harold F. Gray, City Health Officer at Palo Alto, has issued a most complete report of the activities of the City Health Department. Palo Alto is the only city of its size in California to employ a full-time health officer and the results achieved by this official are seen in the annual report just issued. Since employing a full-time health officer, the death rate in Palo Alto has been reduced from 13.9 per thousand population in 1907 to 6.5 per thousand population in 1914. Since 1909 there have been no deaths from typhoid fever, and no deaths from diarrhea and enteritis in persons under two years of age have occurred since 1911.

At the end of 1914 there were but three known cases of tuberculosis in the city. Surely these results show that the full-time health officer with an adequately equipped department is well worth the financial expenditure involved.

★ ★ ★ ★ ★ ★

The organization of mosquito abatement districts has been undertaken in San Mateo County and in Bakersfield. It is surely a sign of community efficiency when there is prompt action in taking advantage of a law which will make it easy to control the mosquito pest and to remove any possible danger of malaria. Now is the time to organize if benefits are to be derived next summer. Form a strong committee and then ask the State Board of Health to send a representative to investigate and advise with regard to the most practical boundaries for the district.

Mosquito
Abatement
Districts.

★ ★ ★ ★ ★ ★

The Santa Cruz *Times* recently published the following editorial concerning failure to report cases of communicable disease. The title of the editorial is "Tell the Truth and Have it Over With": To hide the facts with respect to the prevalence of a communicable disease in a community is to encourage its spread. To tell the facts is to put the people on their guard and assist the health authorities to isolate existing cases. As to the bad effect on the community of such publicity, it is probably more imaginary than real. To have the reputation of cleanliness and attention to public health—even though it involves some newspaper publicity now and then—is to inspire confidence outside, not distrust. It is the still, small voice of gossip that hurts, not the outspoken newspaper article. The harm done by the report that a community is concealing the truth about health conditions is insidious and lasting. The truth leaves no bad effect.

"Tell the Truth and
Have it Over With."

★ ★ ★ ★ ★ ★

"Name three insects which carry disease." In response to this command appearing in an examination in hygiene, a California student made the following contribution to the world's knowledge of insects: "The mosquito carries malaria; the rat carries bubonic plague; and the cow, although not an insect, carries tuberculosis."

Rats, Cows, and
Examinations.

★ ★ ★ ★ ★ ★

This is the season when the cheap lodging houses of the large cities fill up with casual laborers, floaters and unfortunates of all sorts. Most of these men are diseased; many are tuberculous; some are sources of infection for their companions in misery and the community at large. Sooner or later most of them become inmates of our county hospitals, but not until they have had ample

Who Pays?

opportunity to wander about infecting many others, spreading disease broadcast. Not only do they become financial burdens in themselves, but they are factors in making others a source of like expense to the community. Sanitary lodging houses must be provided for housing these people in such a way that contact with others may be minimized. Social conditions must be constantly improved in order that their numbers may be reduced greatly. Because of this problem we are now obliged to spend immense sums of money for county hospitals and for all of the machinery connected with public health and safety that has to do with the care of such unfortunates. It doesn't cost the floater anything. The money spent by charitable associations is a mere pittance. The average citizen, the taxpayer, pays.

★ ★ ★ ★ ★ ★

In many cities the health officer is the municipal factotum. It is not the fault of the janitor that he is made officially responsible for the health of a community—its most valuable asset. **Municipal Jack-of-All-Trades.** *The fault lies with the community itself.* Here is what one such health officer recently wrote to the California State Board of Health: "I have so many duties I don't have time to hunt up cases. *I am City Marshal, Tax Collector, Janitor, Jailer, Poundmaster and Health Officer.*" Meanwhile, frantic appeals for protecting the public health are coming to the State Board of Health from excited citizens, because of the presence of an epidemic of diphtheria in an adjoining town. Isn't it worth while to employ an efficient, full-time health officer to guard the public health of a city—its most important and most valuable asset?

★ ★ ★ ★ ★ ★

It has come to the attention of the State Board of Health that the diagnosis of "paratyphoid fever" is made by some physicians because the case has symptoms like those of typhoid fever, but does not give a positive blood test early in the disease. Such reasoning by exclusion is highly fallacious and entirely unjustified. The diagnosis "paratyphoid fever" should never be made except when there is a positive blood test for one of the varieties of paratyphoid fever. These tests will be made free, on request, at the State Hygienic Laboratory in Berkeley. When a definite diagnosis can not be made in a case clinically like typhoid fever, it should be reported at once to the health officer as "suspected typhoid fever," and more evidence should be secured.

★ ★ ★ ★ ★ ★

Professor A. A. Young of the Department of Economics at Cornell University stated at a recent meeting of the American Statistical Association, that in no state of the Union are the mortality statistics tabulated and analyzed more carefully than in the current reports of the California State Board of Health. This statement was made in a **Bureau of Vital Statistics Commended.**

discussion of a paper by George D. Leslie, Statistician of the California State Board of Health, which is published in this number of the Bulletin. For many years the published vital statistics in California were derived from the reports of physicians in various parts of the State, from hospitals and other institutions, rather than from the returns of local registration officials. From these crude beginnings, the Bureau of Vital Statistics of the California State Board of Health has developed.

★ ★ ★ ★ ★ ★

A physician reported to the State Board of Health that he had recently come upon a party of tourists who had stopped their automobile at a beautiful mountain stream and were drinking the cool water from sanitary drinking cups. This stream contained the entire sewage of one of our mountain cities. An inspector was sent on a special trip to see that this point was thoroughly placarded with the Board's signs reading: "Danger. Do not drink this water without boiling it." Probably hundreds of people have drunk at this point and have blamed hotels or restaurants for their subsequent attacks of diarrhea, or typhoid fever. Some were fastidious enough to use individual paper cups but sufficiently naive to drink from streams whose purity was in doubt. As the work of the Bureau of Sanitary Engineering advances there will be fewer polluted mountain streams and these will be placarded.

★ ★ ★ ★ ★ ★

Have you written to the congressman of your district asking him to support the bill for a Federal Leprosarium and the much more important bill for the payment of a subsidy to hospitals caring properly for nonresident tuberculosis patients? In this issue of the Monthly Bulletin you will find further discussion of these two highly desirable bills.

Beneficent
Health Bills.

MALARIA.



Proximus Tuus, by Achille D'Orsi, 1880.

In the Italian Section of the Palace of Fine Arts at the Panama-Pacific International Exposition, "Proximus Tuus" or "Thy Neighbor," by Achille D'Orsi, attracted more attention than any other exhibit in the gallery. Probably the average onlooker saw in this work only a victim of low economic conditions. Probably very few suspected the tragedy of disease written on the face of the "man with the hoe sitting down," as Eugen Neuhaus calls him. Neuhaus adds, "no matter whether the man succumbed to the dreariness of work or to the malarial fever of the Pontine swamps, all that has ever been said about Millet's man and the terrible fatalism of his facial expression is found in this piece of sculpture."

Mr. Victor Henderson, Secretary of the Regents of the University of California, very kindly wrote to Arburino Colisanti, of the Superior Council for Antiquities and the Fine Arts at Rome, Italy, asking permission to reproduce "Proximus Tuus" in the Monthly Bulletin of the California State Board of Health. Following is a copy of the letter from Signor Colisanti:

CONSIGLIO SUPERIORE
Perle Antichita e le Belle Arti.

ROME, November 25, 1915.

DEAR SIR:

The Direction of Fine Arts is very glad to give you the permission to reproduce the "Proximus Tuus" by Achille D'Orsi, for the work of propaganda against the malaria, initiated by the Berkeley University. You can find all the necessary information about that work and his author in the catalogue of the Italian Section of Fine Arts at the P. P. I. E.

We should be grateful to you if, in your publication, you would notice that the work of D'Orsi is made in the year 1880 and it reproduces the type fortunately now quite disappeared from our country by means of the activity that we employed to combat the malaria.

Yours very faithfully,

(Signed) ARBURINO COLISANTI.

To the Secretary of the Regents,
University of California,
Berkeley (California), (U. S. A.)

REGULATIONS OF THE CALIFORNIA STATE BOARD OF HEALTH FOR THE PREVENTION AND CONTROL OF MALARIA.

Rule 1. Notification.

Any person in attendance on a case of malaria, or a case suspected of being malaria, shall report the case within twelve hours to the local health authority, who shall in turn report at least weekly, on the prescribed form, to the Secretary of the State Board of Health all cases so reported to him. In the absence of local rules permitting notification by telephone, the report to the local health authority shall be in writing.

Rule 2. Diagnosis.

The local health authority may require the submission of specimens of blood from cases of malaria, or cases suspected of being malaria, for the purpose of examination by a state or municipal laboratory. It shall be the duty of every physician attending a case of malaria to take samples of blood for examination when required to do so by the local health authority.

NOTE.—Examinations of blood smears for malaria will be made without charge by the Bureau of Communicable Diseases, at the State Hygienic Laboratory and the Branch Laboratories, for all communities except cities having a population of over 25,000. It is expected that these larger cities will provide adequate laboratory facilities. (See directions for sending material to the Laboratory.)

Rule 3. Instructions to Household.

It shall be the duty of the physician in attendance on a person having malaria, or suspected of having malaria, to instruct the members of the household in precautionary measures for preventing the spread of the disease to others through the medium of the mosquito.

NOTE 1.—For malaria to be transmitted from one person to another it is necessary that an anopheles mosquito should first bite a person having the malaria organisms in his blood, and, after a period of from eight to sixteen days, should bite a susceptible person. In no other way is malaria transmitted. (See appended article "Malaria-mosquito Control.")

NOTE 2.—A malaria patient during the height of his illness, should be kept in a room effectively screened against mosquitoes, and, until his blood is free from malarial organisms, he should be in a house thoroughly screened against mosquitoes from sundown to sunrise. These precautions should be taken until the patient recovers completely or goes to a region entirely free from anopheles mosquitoes.

NOTE 3.—In quinine we have a valuable remedy for malaria. The quinine treatment should be continued under the instructions of a physician until the cure is completed, that is, until all danger of relapse or of chronic malaria or of remaining a malaria carrier is over.

NOTE 4.—Where the danger from malaria is great the attending physician should instruct exposed members of the household in the prophylactic use of quinine and recommend its use during the season of greatest danger of infection (May 1 to October 1), or until the persons have been removed from the region in which anopheles mosquitoes are present.

Rule 4. Investigation and Measures for Control.

Upon being notified of a case of malaria, or a case suspected of being malaria, the health authority shall make an investigation which shall include an inquiry as to the location where the infection took place and the breeding places from which the mosquitoes responsible for carrying the infection came. He shall take proper legal steps to prevent further

infections, and, where possible, secure the abatement of the mosquito-breeding places.

NOTE 1.—See appended article on "Malaria-mosquito Control."

NOTE 2.—The most effective method for carrying out control measures will be through organizing and maintaining a mosquito abatement district in accordance with the provisions of chapter 584, Statutes 1915. (See Mosquito Abatement District Law.)

NOTE 3.—The State Board of Health will make investigations to assist local committees to determine the extent of malaria and to decide upon practical boundaries for proposed districts.

NOTE 4.—Special investigations by the State Board of Health are being made from time to time to determine the endemic index for malaria by ascertaining what proportion of the healthy school children in a given region have the organisms of malaria in their blood and are therefore possible sources of infection.

Rule 5. Malaria Carriers.

Malaria carriers are persons who are free from obvious symptoms but who harbor the malarial organism in their blood and are therefore capable of infecting the anopheles mosquito. They are hereby declared to be a menace to the public health. They should receive systematic treatment and must be kept from exposure to anopheles mosquitoes until complete recovery.

NOTE 1.—All known malaria carriers should be vigorously treated and kept from exposure to anopheles mosquitoes until the malarial organisms have disappeared from the blood. The same precautions against infection of malaria-bearing mosquitoes should be observed as in the case of a malaria patient. (See Rule 3, Note 2.)

Directions for Sending Specimens of Blood to the State Hygienic Laboratory for Examination.

Physicians and local health authorities in communities having a population under 25,000 may obtain from the State Hygienic Laboratory, or any of its depositories, outfits for preparing and mailing specimens of blood for examination for malaria. The following directions and data card accompany each outfit:

CALIFORNIA STATE BOARD OF HEALTH.

State Hygienic Laboratory, Berkeley.

Directions for Taking Specimen of Blood for Examination for Malarial Parasites.

Take the blood before administering quinine. Cleanse the skin of the lobe of the ear, avoiding the use of bichloride of mercury, carbolic acid, or other strong reagent. Soap and water and alcohol are recommended.

Prick the lobe deeply with a sterile surgical needle or lancet to insure a free escape of blood, manipulating the lobe with the fingers, if necessary, to secure a sufficient amount.

Wipe off the first two or three drops with a clean cloth and touch the freshly escaped blood with the surface of one of the slides so as to secure a small drop.

Immediately touch the drop of blood on the slide with the end of the second slide allowing the blood to spread along the edge by capillarity. Then lead the drop along the first slide so as to obtain a thin, even smear.

Allow the blood to dry, then repeat the operation, securing a blood smear on the second slide.

Fill out the accompanying data card and enclose it with the specimens in the mailing case. Mail to the laboratory.

CALIFORNIA STATE BOARD OF HEALTH.

State Hygienic Laboratory, Berkeley.

Please fill out this side of blank in full, and send with specimen to **Laboratory**.

Patient's name----- Address-----
 Physician's name----- Address-----
 Health Officer's name----- Address-----
 This is the 1st, 2d, 3d,-----, specimen from this case. Date,-----
 Patient's age-----, sex-----, occupation-----
 Supposed source of infection-----
 Has quinine been administered before preparation of smears?-----
 The preparations were made—During a chill?-----After a chill?-----How long?-----
 Clinical diagnosis-----
 Report by { telegraph (collect) } to-----
 { telephone (collect) }-----
 { mail }-----

MALARIA AND MOSQUITO CONTROL.

WILLIAM B. HERMS, Consulting Parasitologist of the California State Board of Health.

Breeding Habits of Mosquitoes.

Water is absolutely necessary for mosquito breeding. The situation, however, varies somewhat for the several species. Places suitable for culicine mosquitoes are not always suitable for the anopheles; but, quite generally, where the latter is found the former will also occur. The culicine female will deposit her eggs even in the smallest receptacle containing water, such as tin cans, tubs, barrels (see Fig. 1), broken gourds, etc. It should be noted here that rapidly running water is not a favorable breeding place for several reasons. However, a running stream or ditch must be kept free from vegetation and should be "edged up" so that no little coves are formed in which the water remains quiet.

The most favorable places for anopheles to breed are overflowed areas in which the water is shallow enough to allow grass and other low vegetation to exist. (See Fig. 2.) Such conditions are often produced in meadows by breaks in irrigation ditches, water supply pipes, and improperly channeled creeks. Marshy districts in which the water is just below the surface, are made dangerous through the hoof marks of cattle and horses. It is frequently the case that places which the casual observer considers highly dangerous are quite harmless, and that the really bad places are often overlooked. Reservoirs, dredger ponds, and sluggish streams are often regarded with the keenest disfavor, but an examination may indicate the entire absence of "wigglers." Of course, a badly kept basin or reservoir may prove a menace due to the accumulated vegetation along the edges and the shallow condition of the water. A clean pond with sharp, deeply cut banks need not be a menace as a mosquito breeder, particularly in the presence of surface-feeding minnows.

A receding stream in summer often leaves shallow ponds along its banks. These very often become the most suitable places for an abundant crop of mosquitoes, notably anopheles. The construction of railroads and highways frequently obstructs natural drainage, thus causing numerous stagnant ponds.

Life-History of Mosquitoes.

Mosquitoes must have water, if only a thimbleful, in which to develop. In some species the eggs may be laid on mud, but in nearly all cases the eggs are deposited on the surface of the water, either in boat-shaped masses of 250 to 450 eggs (culicine, see Fig. 3 A), or singly, usually in geometrical figures of 25 to 125 eggs per female (anopheline, see Fig. 3 B). The eggs hatch in from twelve to forty-eight hours. The larvæ are called wrigglers. These creatures are very tiny at this time and are hardly visible to the naked eye, but in a few days become fairly conspicuous objects.

The wrigglers most commonly seen hang from the surface of the water at an angle with their heads down. This is the characteristic position of the culicine (*Culex*) species (see Fig. 3 G). Less conspicuous wrigglers, quite different from the above and usually remaining unseen unless attention is called to them, lie parallel to the under surface of the water film and closely adherent to it. These are the larvæ of the anopheline (*Anopheles*) species, or malaria-bearing mosquitoes (see Fig. 3 H). During this and the following stage these organisms are air breathing, just as in the adult stage, notwithstanding their aquatic habitat. By keeping the mosquito wriggler totally under water it can be drowned like any other air breather. The reason, then, that wrigglers are found at the surface of the water is that they are getting air through the film by means of their rather conspicuous siphons or air funnels. The purpose for placing oil on the surface of the water is to form a film through which air can not be obtained.

The wrigglers secure food by feeding on the algæ and other tiny plant life growing on the sides and at the bottom of the pool, or by eating smaller organisms at or near the surface of the water. Thus it is not difficult to observe the movements of these creatures as they squirm about, while breathing at the surface, or wriggle down to the bottom, their large, well developed jaws nibbling the while. Development is greatly influenced by temperature and by food supply, and the duration of this stage is lengthened when these conditions are unfavorable. In summer, this stage may last from seven to eight days, but may be as long as six weeks in early spring or late autumn. Many of the culicine mosquitoes, appearing in the spring in California, have their origin from overwintering wrigglers. Of course, many mosquitoes hibernate during the winter under buildings, beneath debris, or in other protected situations, coming out in the spring, or even on warm days in winter to bite and breed. The *Anopheles* wrigglers always require a third to a half more time than the *Culex* wrigglers to develop; thus if the conditions are such that the latter requires ten days, the former will require about thirteen to fifteen days. But the wrigglers of the *Anopheles* are never found during the winter months and not until the spring is pretty well advanced; even then their growth is quite slow. The adults of this genus, which are often seen in numbers as early as March, are individuals which have hibernated and upon them depend the future generation. The next stage after the larva or wriggler is the pupa or tumbler, also aquatic, provided with a pair of air trumpets situated far forward as compared with the single breathing tube of the larva (see Fig. 3 E). The tumblers of the two groups of mosquitoes do not differ very greatly, though the *Anopheles* are more strongly arched and

the head end is longer than in culex. This stage is comparatively short, only two to four days being thus spent. Then the pupa rises to the surface and the skin splits along the back permitting the winged insect to emerge. Undoubtedly many mosquitoes never have the privilege of sucking the blood of warm-blooded animals, but where blood is available the female fills herself and the development of eggs proceeds.

We have now seen that the culicine mosquitoes require, in midsummer, at least ten days for their complete development from egg to adult. Fifteen to eighteen days seems to be the shortest time for the anopheles to pass through this process. In early spring the total time is correspondingly longer, owing to the lower average temperature. Observa-



FIG. 1. A collection of barrels. These, when containing water, invariably afford ideal breeding places for mosquitoes.

tions show that the newly emerged female insect lives on an average of from thirty-five to forty days during the summer. The male lives only three or four days, rarely longer, even under most favorable conditions. Mosquitoes commonly hibernate during the winter and may pass several months in this state, appearing in the spring to propagate the species.

How to Recognize Anopheles Mosquitoes.

The most conspicuous differences between the anopheline and culicine mosquitoes are illustrated in the figures and consist in the relative length of the palpi and proboscis, and the difference in position when resting. The "song" of anopheles is also less audible than that of culex, and usually spotted wings indicate the former, though there is a

relatively common California species of culex, *Theobaldia (culex) incindens*, which has spotted wings.

Examining the head of a female mosquito, five prominent extending organs may be seen: a pair of threadlike antennæ or feelers, the prominent proboscis or beak, and a pair of structures called palpi which are located on either side of the beak and have their origin at its base. In culicine mosquitoes these palpi are less than half as long as the beak (see Fig. 3 I); in anopheline (malaria bearing) these organs are nearly as long as the beak (see Fig. 3 K). Hence in the anopheles mosquito the five prominent projecting organs on the head are arranged in length like the fingers on the hand. (See Fig. 3 J.)

The culicine mosquito rests in such a position that the body is parallel to the surface on which the mosquito rests and the proboscis makes an angle of 45 to 90 degrees with the body (see Fig. 3 L), while the anopheline mosquito rests with its body at an angle of 45 degrees or more with the wall or ceiling, and with the beak and body nearly in the same line (see Fig. 3 M).

Essentials of Mosquito Control.

Since the only known means for the transmission of malaria is through the agency of the anopheles mosquito, the logical way to control the disease is to control the mosquito. Other methods of malaria control, such as quinine prophylaxis, are employed in some countries, notably Italy. Where mosquito control is possible, and certainly it is in California, mosquito control is the most feasible method.

The essentials of control are indicated very clearly by a study of the life-history (development) and habits of the mosquito. No mosquito ever came into existence without water, in which its developmental stages were passed. Mosquitoes will not breed in dry grass, but they may rest there during the day. Individuals may be found far from water, but they are carried there by wind or other agency. However, in most cases it can be shown that there is an unsuspected pool or receptacle of water close by; perhaps it is the crotch of a tree containing water, or only the calyx, or leafy cup, of a flower or desert plant, providing enough water to breed numerous mosquitoes.

The malaria mosquito does not fly far from its breeding place except under rare conditions, hence most ranches on which malaria is prevalent breed their own mosquitoes on the place. Perhaps the source is only a leaky faucet in or near the fruit-packing house. Herein lies the importance of careful and close inspection. Almost invariably it is the apparently insignificant place that breeds the anopheles. But anopheles may breed also in conspicuous places, such as grassy meadows partially covered with water. This latter condition may be a most prolific source of anopheles wrigglers. A break in an irrigation ditch, or a water pipe, as it traverses a meadow may produce just such a marsh, or a similar condition may be caused by a creek spreading out over a pasture.

Manifestly the control of such conditions is easily accomplished by stopping the break in the ditch or water pipe; digging a deeper channel for the creek; emptying all vessels of useless water, etc.

If the mosquitoes are well advanced in their development **when** such measures are taken the marsh may not dry up before the **mosquitoes** emerge in the winged state, therefore it may be necessary to **apply** oil to the surface of the water.

Oiling Methods.

The reason for oiling mosquito-breeding ponds has **already** been explained. The most desirable oil for the purpose is one **that** will spread most readily without breaking up into patches and **that** will remain longest on the water in an effective condition. **Crude** oil, it will be seen, breaks up into patches between which the **water** is not affected, so that wrigglers have been found developing in **such** places



FIG. 2. Illustrating the formation of a shallow marsh caused by a **break** in an irrigation ditch.

in cases where this oil has been liberally used. Crude oil also **can** not be used very well in ordinary spray pumps. Therefore it **is** evident that this material is not to be recommended for mosquito **control**. Its lasting qualities are very good, however. Kerosene spreads **most** satisfactorily and does its work quickly but evaporates in a **comparatively** short time, thus requiring frequent repetition. A **combination** of the two which will bring about more nearly the desired results **can** very well be made. Our best results have been obtained with a **mixture** of equal parts of crude oil (No. 2 skid has been used mostly) and "Water White" kerosene, though the proportion may safely range **to** three parts of the former and one of the latter. We have also used **successfully** a treated stove oil at about 28 degrees to 32 degrees Baumé.

How Applied.

Simply pouring on the oil with a dipper is wasteful and requires some little time if all the smaller pools of water adjacent to a given area are to be treated. Experience has taught that the small, apparently insignificant pools of water are in reality the greatest menace and are commonly overlooked. The use of a knapsack spray pump of five-gallon capacity is highly recommended (see Fig 4). This can be strapped on the back and will provide enough oil for twenty minutes continuous spraying or one to two hours of ordinary oiling. Where it is out of the question to use a horse and cart to carry the oil, the field man can save himself many steps and some embarrassment if he will make it a habit to carry a small quantity of oil with him at all times in a pint or quart tin to which is attached a rubber bulb and a spray spout. A good sized wad of cotton waste soaked in oil and placed in a pool of stagnant water will continue to give off oil for some time and is often very serviceable.

When Applied and How Often.

Oil should be applied whenever and wherever the wrigglers or tumblers are found, even though permanent correction is planned. This will prevent them from being washed out, in the process of draining, into some other situation where they would be liable to complete their transformation. A teaspoonful of oil, poured on the water in a well, will not greatly affect the taste of drinking water and will kill mosquito wrigglers. Screening the well is preferable. The frequency with which oil must be applied depends on the rate of development of the wrigglers and the evaporation of the oil; both conditions are dependent upon the temperature. Therefore, more frequent applications are necessary during the midsummer, when, with the oil recommended above, the spraying should be repeated every twelve days, and with heavier oil and cooler climate (San Francisco Bay region), every three or four weeks. If it requires ten days for some mosquitoes to pass through their entire transformation, one might think that applications of oil every twelve days would not be often enough, but it must be remembered that the oil kills all wrigglers and tumblers at the time of contact and the coat remains on the water for a day or two, often longer, during which time any adult mosquito, intending to lay eggs, is killed on coming in contact with the oil. But after the oil has evaporated quite largely the breeding may begin again, but the next application of oil will catch the oncoming brood before the ten days necessary for complete development have expired.

Irrigation.

It is quite commonly asserted that malaria makes its appearance together with irrigation. This is evidently true, but it need not be so if proper attention were paid to the best methods of irrigation. Certainly southern California is necessarily the scene of much irrigation, yet malaria is practically absent. Hence irrigation as such is not to blame—it is the *method* of irrigation. Where water is abundant, it is used unsparingly and without regard to leaky ditches and great waste, thus forming the ideal swamp areas for the propagation of the anopheles mosquito. On the other hand, where there is little rainfall and water is expensive, with greater evaporation throughout the year,

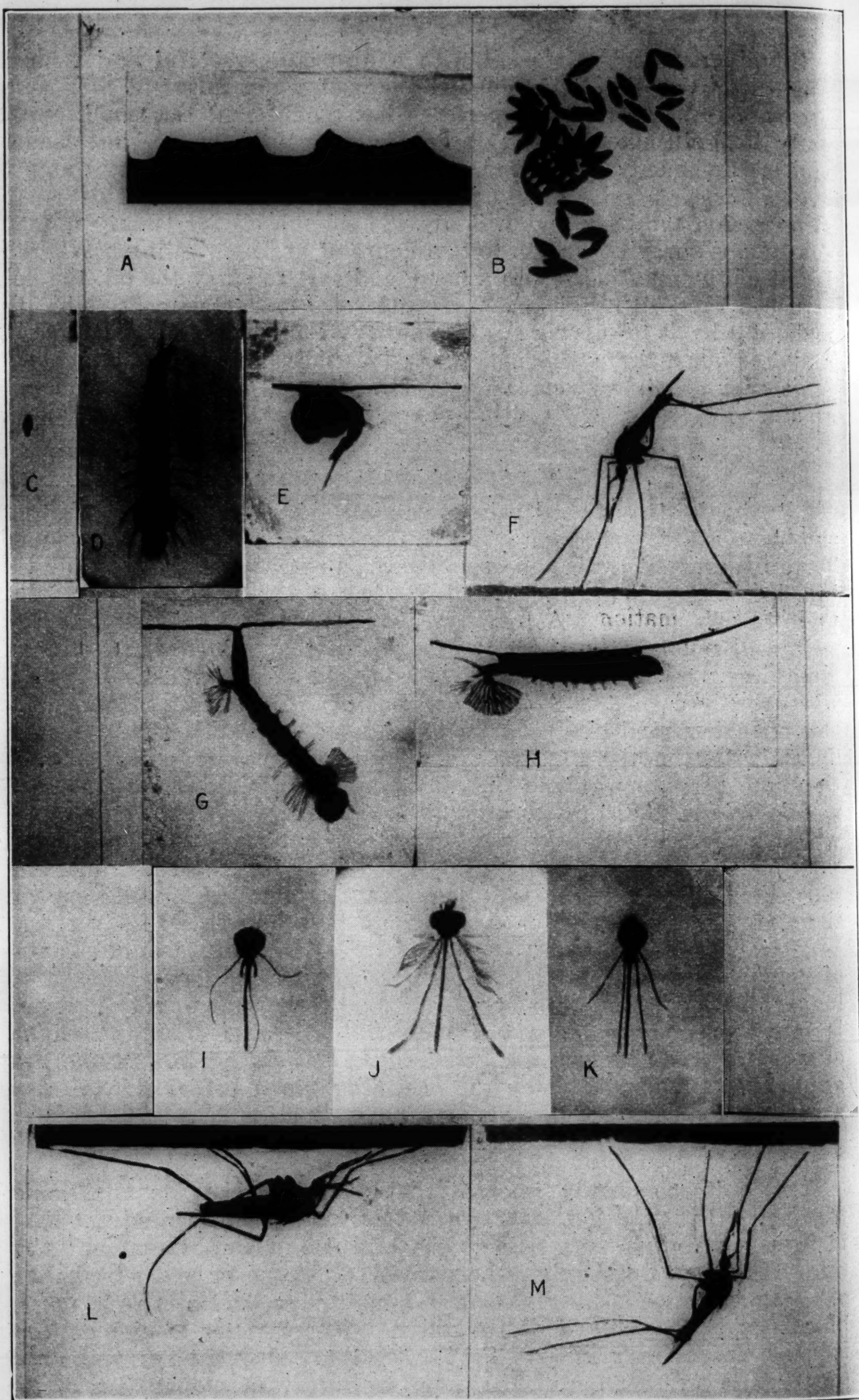


Fig. 3.

- FIG. 3. A—Egg-boats of the culicine mosquito.
 B—The singly deposited eggs of the anopheline mosquito.
 D—Mosquito larva (wiggler).
 E—Mosquito pupa (tumbler) resting at the surface of the water.
 F—The anopheline mosquito (adult female).
 G—Culicine larva, showing characteristic position while breathing at the surface of the water.
 H—Anopheline larva, showing characteristic position while breathing at the surface of the water.
 I—Head of a culicine mosquito (female) showing the relative length of the appendages.
 J—Head of the male of either species, showing feathered antennæ.
 K—Head of an anopheline mosquito (female) showing relative length of the appendages.
 L—Showing the characteristic resting position of the culicine mosquito (adult female).
 M—Showing the characteristic resting position of the anopheline mosquito (adult female).

the water is husbanded, with the result that leaky ditches and consequent swamps are practically unknown and, therefore, the anopheles mosquito does not obtain a foothold.

The farmers of northern California in general must pay more attention to the improvement of their irrigation methods. In irrigating, the water should not be allowed to remain in pools for long periods, say not over several days. Water which has stood ten days or over is dangerous. The use of metal, cement, or tile irrigation ditches, which prevent lateral flow except when wanted, will greatly help in lessening the vast number of mosquitoes now produced in or by poorly-kept ditches. The running water in the ditches need not be feared—mosquitoes do not breed in rapidly-running water. The current in ditches of careless construction may be sluggish and further retarded by weeds, and under such conditions mosquitoes may breed. The ditch must be kept free from weeds and the edges should be smooth. It is suggested that borrow pits in the construction of ditches should be at some distance from the ditch and from higher ground if possible; otherwise they will fill with seepage water and breed mosquitoes.

H. F. Gray, Health Officer of Palo Alto, who has for past years given much attention to this problem, says "It may be stated as a general proposition that it is the misuse of irrigation water, or defective irrigation systems, and not irrigation itself, that is responsible for mosquito breeding and malaria on irrigated lands. Far too little attention is given to drainage. There are a number of cases on record where whole districts have been ruined by irrigation with no provision for drainage, and in certain large districts the ground water has been raised to an alarming extent. Under such conditions mosquitoes and malaria become an important factor in retarding commercial and agricultural development."

Screening.

Against mosquitoes nothing larger than the best eighteen mesh (eighteen wires to the inch in each direction) screen should be used, because the mosquito is persistent and will work its way through a large mesh. In malaria-ridden districts, it is time well spent to hunt down and destroy all mosquitoes that may have secured entrance despite the screens. It is, furthermore, wise carefully to screen all rooms in which there are malaria patients so that anopheles mosquitoes can not become infected through the blood of such patients. Screens must be made to fit snugly, and must be kept in good repair.

For campers, prospectors, soldiers, and others required to sleep out of doors, special folding frames covered with mosquito netting can be secured. These are light and can be folded to convenient size when not in use.

Cisterns, fire-buckets, and other water receptacles need to be kept properly screened or securely covered.



FIG. 4. Showing method of oiling pool of water by means of knapsack spray pump.

When to Begin and When to Close the Work.

The best results are secured in a new district by eliminating as far as possible the last brood of mosquitoes in the autumn, *i. e.*, oil, or drain off, all mosquito breeding pools in October and go over the territory once again in November. In this way the number of mosquitoes which hibernate over winter is reduced to a minimum. The spring work should begin about March, depending on the weather; if warm, the work must begin earlier; if cool, then later. This can only be ascertained by inspecting likely pools in order to determine whether mosquito larvæ are present and what size they have attained. Usually the last larvæ are found in October and the campaign may usually close safely with the end of this month. This applies to the *anopheles* mosquito (the malaria-bearer) and does not apply to the *culicine* varieties, including salt-marsh species.

NOTE.—Copies of the Mosquito Abatement District Act, chapter 584, Statutes of 1915, may be obtained by applying to the California State Board of Health, Sacramento.

PLANS FOR MALARIA CONTROL UNDER THE NEW MOSQUITO ABATEMENT DISTRICT ACT.*

By DR. GEO. E. EBRIGHT, President California State Board of Health.

Wherever a communicable disease prevails, there is nothing to be gained from any standpoint by attempting to hide its presence. Frank statements of facts in such cases by health officers are frequently objected to at first by business interests, particularly by real estate dealers. History has shown, however, that a policy of frank honesty is in the end, from a business standpoint, by far the best and most economical. Fears of publicity are based upon a supposition that the acknowledgment of the presence of a disease interferes with commerce and real estate values. However, on the other hand, the fact of the recognition by the health authorities of the actual existing conditions and the knowledge that proper methods of control are inaugurated and conscientiously prosecuted produce a sense of security which offsets all other considerations. For these reasons it is desirable to confront the problem of malaria without reserve. It will be no new story to the people of California, particularly those living in the great valleys of Sacramento and San Joaquin.

Before 1850 malaria was unknown in California. It was introduced in the early 50's during the great influx of population into the State, probably from three sources: The Mississippi Valley, the Isthmus of Panama and the shores of the Mediterranean. During the period following the discovery of gold and the building of the great continental railroads, emigrants arrived from the malarial-infected regions of the Mississippi by way of the transcontinental emigrant routes, also arriving by water across the Isthmus of Panama, there becoming infected with malaria and introducing it chiefly, probably, through the region of Sacramento and its vicinity. Again, many laborers were employed upon railroad construction who came from the malarial-infected districts of Italy. These carriers, arriving in a country already the home of the anopheline mosquito, readily established foci of malaria in the great valleys and along the foothills of the western slope of the Sierras, until at the present time it is to be found generally in Placer, Sacramento, San Joaquin, Butte, Tehama, Shasta, Fresno, Tulare and Kern counties, which nine counties show 75 per cent of the total deaths from malaria in the State. It has been estimated by the California State Board of Health that the annual loss to the State from malaria directly and indirectly, to health, labor and property values is \$2,820,400. It is unnecessary for present purposes to more than mention that certain varieties of mosquitoes are absolutely necessary for the propagation of malaria, but it is timely to emphasize the fact again that the successful eradication of malaria depends entirely upon the eradication of the anopheline mosquito.

This insect is a country mosquito rather than an inhabitant of cities; for that reason malaria is a country disease and not a city disease. The

*Read at Annual Conference of State, County and Municipal Health Officials held at Oakland, September 7-10, 1915.

place where the city of Sacramento now stands was at one time highly infected with malaria, but now malaria cases do not occur in Sacramento except by importation. Consideration of the cause of malaria includes not only investigation into the habits of the mosquito, its breeding places, life history and the climatic conditions under which it exists, but also has reference to carriers. The anopheline mosquito is to be found in still fresh water such as ponds left by the overflow of rivers or drainage canals, empty cans, buckets, etc., containing rain-water, surface wells, prospect holes, etc. In the southern part of California where irrigation is carried on very extensively but where water is comparatively scarce and of such value as to require careful husbanding, drainage ditches are constructed with care, many times of concrete or other material, which do not allow the growth of grass and brush along the edges that could offer mosquito breeding places. For that reason and for the reason of the lesser rainfall, the southern part of the State is free from malaria in comparison with the northern part where water is more abundant, where river overflow is common and where cheap water gives rise to less care in preventing breaks in drainage ditches and where more frequent rain allows the standing of fresh water in waiting receptacles for a sufficient length of time for the hatching of mosquitoes.

Children Chief Carriers.

In mosquito-infested districts it has been found that the chief carriers are children. On the coast of western Africa it has been found that 100 per cent of children were infected in certain localities while in less badly affected regions the percentage ranged from 10 per cent to 20 per cent. These observations were made largely upon children, the children showing no symptoms of malaria at the time of examination; in other words, the disease was latent. Sims and Warwick, Talladejo, Alabama, found that between 8 per cent and 9 per cent of the children were infected and only $3\frac{1}{2}$ per cent developed malarial symptoms within five months although plasmodia could be found in the blood during this time. Malaria is essentially a disease of childhood in those localities where the disease is endemic and only those children survive who offer the greatest resistance to the malarial poison.

The control of the mosquito involves several factors, including drainage, oiling methods, house protection and the use of the natural enemies of the mosquito, particularly certain fish, such as various minnows, especially the top minnow and gold fish and the roach (in this connection it may be mentioned that the dragon fly or mosquito hawk preys upon this pest), and the educational factor. The latter is by far not the least important. Public health regulations will always result in failure without the intelligent co-operation of the community involved. It is necessary in dealing with malaria to conduct an intelligent campaign of education. To that end it is first necessary that a sufficient survey of the situation be made, not only to give the health officer proper data to work upon, but in order to enable him to present to the people the exact status of the situation, after which intelligent and necessary co-operation will be encountered upon the part of the

community and the press. An educational campaign can be easily carried out because the subject is interesting. The public press of the State of California has always been of service to the health authorities and will always be found more than willing actively to co-operate with any proper measures. Lectures, lantern-slide exhibitions, moving pictures, mosquito-breeding tanks for show windows, are important instruments. The interest of school children is of much importance and is easily elicited. Children are easily taught the recognition of the mosquito and his breeding places and habits. Their interest may be stimulated by competitions; for example, competitive essays upon the subject of malaria for which prizes may be offered. In this manner education upon the subject is disseminated among the rising generation and by them carried to their associates at home.

Drainage is Permanent in Results.

The control of breeding places involves permanent and temporary work. Drainage, wherever possible, is in the nature of permanent measures. This also includes the cleaning up of grass and brush from the sides of rivers, canals, ditches, etc. Temporary measures are supplementary to permanent work and one of the most important is oiling. The oil to be used should be of such a character as to spread a thin film, which remains upon the water as long as possible. Oil should be applied wherever wrigglers are found. The time of repetition of the use of oil depends upon several factors. As a rule, twelve days in summer and under cooler conditions varying intervals up to three weeks. Where oil is impracticable, as for instance in tule lands, the use of top minnow and other mosquito-feeding fish should be considered. House protection involves the drainage of all pools, marshes and wet lands near the house, the cleaning up of banks of springs so as to allow free access to the banks for destroying larvæ, and the use of oil upon ponds which are undrainable, preventing the access of the anopheline mosquito to man by the removal of brush and tall trees about the house. The anopheline mosquito can not live in the sunlight nor does it travel far from its breeding places. The male mosquito will be found at the breeding place and the female, which is the one active in the spread of malaria, does not as a rule travel more than a quarter to half a mile from the breeding place. The farthest distances that the mosquito has been found from breeding places have been where bright electric lights or wind have enabled her to increase her normal sphere of activity. House screening is of value if carried out intelligently. Screening that is ordinarily done is utterly inadequate. Nothing larger than the best one millimeter mesh screen should be used as the screening of windows and doors should be done in such a way as not only to prevent the ingress of the insects while they are closed, but also to prevent their entering the house whenever a door is open.

New Law Good Basis for Work.

Such, in brief, is an outline of the methods employed in combating malaria. The recent law establishing mosquito abatement districts provides that such districts may be established by local boards of supervisors upon the presentation of a petition signed by the residents of

the district amounting to 10 per cent of the vote cast for governor at the previous election. With the incorporation of such districts a sufficient tax is assessed to meet the necessary expense. This law must be the basis of work carried on against malaria and if results worthy of the name over the extensive area now infected are to be obtained the chief responsibility rests upon the State Board of Health. Realizing its obligations the Board has begun the work by sending into the field Professor Herms of the University of California who is the Board of Health's Consulting Parasitologist and to whom credit should be given for having done much important work upon the subject of malaria throughout California and to whom also credit is due for having carried out successfully, so long as money was available, several campaigns of mosquito eradication. With him are associated several experts from the State Hygienic Laboratory at Berkeley and Dr. Sawyer, secretary of the Board. Their work is, first to establish an endemic index for malaria, that is to measure the amount of malaria prevalent and to study carefully the types of mosquito involved and at the same time also to act in an advisory capacity for the affected localities in the matter of malaria control districts and in supplying proper men to carry out the work in the districts when established as provided for by law. Upon their shoulders rests also the chief responsibility of public education in order that the necessary co-operation may be elicited. The work of Gorgas and Keene in Havana during ten years up to the year 1910 affords us at the present time wonderful encouragement. During 1900 there were 325 cases of malaria in Havana.

1901	-----	151
1902	-----	87
1903	-----	51
1904	-----	44
1905	-----	32
1906	-----	26
1907	-----	23
1908	-----	19
1909 (to July)	-----	2

We should be able in California to reduce malaria 80 per cent. We should be able to show at the end of two years that the disease that has played such havoc in the most fertile regions of the State of California for half a century is a thing of the past. With intelligent co-operation this can be brought about.

PELLEGRA CAUSED BY ONE-SIDED DIET.

By GUY P. JONES, Associate Editor.

For many years pellagra has been prevalent in the southern part of the United States, particularly among the poverty stricken, in hospitals for the insane, prison labor camps, orphanages, and other institutions where dependents are cared for. The cause of the disease has been the subject of much research and investigation and it is only within the last few weeks that the United States Public Health Service has announced its discovery of the cause. It is due simply to a failure to include the protein foods, such as meat, milk or legumes in the diet.

The importance of this discovery is manifest when it is considered that during the present year there will be a total of at least seventy-five thousand cases of pellagra in the United States, with seventy-five hundred deaths. In the southern states the disease is endemic in certain institutions where a one-sided diet is provided for inmates. Nurses and attendants who are supplied with a well-balanced dietary are apparently immune to the disease.

California Institutions Immune.

The discovery of the cause of the disease is not of great moment to California, where an exceedingly small number of cases has occurred. This fact reflects great credit upon the state institutions and upon the State Board of Control, which has insisted that state wards, whether in prisons or hospitals, are entitled to a well-balanced dietary. In fact, Professor M. E. Jaffa, Consulting Nutrition Expert of the California State Board of Health, is engaged in studying the dietaries of state institutions and is giving the benefit of his skill as a nutrition expert not only to those institutions, but also to county institutions, including hospitals for the tuberculous. This work is in addition to that of analyzing foods and drugs purchased for state institutions, which is carried on by the Pure Food and Drug Laboratory of the State Board of Health.

Few Cases in California.

Histories for most of the cases of pellagra that have occurred in California during the past three years are on file in the office of the State Board of Health. A large proportion of deaths from the disease has occurred in sanitariums where a vegetarian dietary is established, and in private and public institutions for the mentally disturbed. The mental symptoms of the disease, prevailing during the later stages, explain the presence of cases in the latter sort of institutions.

It must be stated, however, that a one-sided vegetarian diet is necessary for producing the disease—a vegetarian diet which includes leguminous foods rich in protein, such as peas and beans, not being capable of producing pellagra. Milk and eggs, protein foods, are often added to vegetarian dietaries and insure immunity to pellagra by bringing about a balanced ration. A certain number of persons, however, for economic reasons or as a matter of taste, live upon cereal foods.

alone. In these persons pellagra often develops. The increased cost of foods of high protein value undoubtedly has much to do with the use of the one-sided diet and consequent development of pellagra.

Results of Experiments Conclusive.

The experiments of the United States Public Health Service, referred to above, were conducted in the southern states in orphanages, asylums and prison labor camps, where the disease is prevalent. The most important of these experiments was conducted at the farm of the Mississippi State Penitentiary, near Jackson, Mississippi. This convict camp is in the center of a tract of thirty-two hundred acres. Permission was secured from the state authorities for testing the possibilities of producing pellagra in healthy human, white, adult males, by feeding them a one-sided diet, chiefly cereals. Eleven of the convicts, upon promise of pardon, volunteered for the experiment. The diet given them was plentiful and more than sufficient to sustain life. They were fed biscuits, fried mush, grits and brown gravy, syrup, corn bread, cabbage, sweet potatoes, rice, collards and coffee with sugar. All foods were of the best quality and well cooked. Examinations were made to determine if the convicts used in the experiment were afflicted with any other diseases; they were kept under observation for two and one-half months before the experiment was started.

Symptoms Develop Early.

After five months of the cereal diet, the skin symptoms, which are characteristic of pellagra, began to develop. Gastro-intestinal disturbances were noted early. Six out of the eleven men engaged in the experiment developed pellagra and no cases of the disease developed in the camp except among those men who were living upon the one-sided diet. This experiment was the climax of a series of experiments conducted in the different institutions of the South, all of which prove conclusively that pellagra is caused by the insufficient use of the protein foods in the diet.

Many advanced cases are admitted to hospitals for the insane because of the mental disturbance, which is characteristic of the disease in its last stages. It is a significant fact, however, that only two or three cases appear annually in California state institutions and no cases have been known to develop in these places.

Out of the twenty-seven deaths from pellagra in California during 1914, twelve were in persons who were confined in county hospitals, state hospitals for the insane, and private hospitals and sanitariums using only a vegetarian dietary.

Few Cases in California.

California is to be congratulated because of the very few cases of this disease in the State. There were but nine deaths from pellagra in 1912, eighteen in 1913, twenty-seven in 1914, and there have been but twenty deaths from the disease so far during 1915.

Pellagra is one of the most common diseases among dependents, and there are very few large institutions in the United States caring for this class of cases that do not contain a considerable number of pellagrins. The policy that has been adopted in California, that of

supplying state wards with plenty of good, wholesome food in great variety, has probably done more in promoting the health of inmates than any other one measure that could possibly have been adopted. It is certain that many more cases of pellagra would have developed in our state institutions had inmates been supplied with a one-sided diet.

HEALTH AUTHORITIES FAVOR LEPROSARIUM.

The proposed establishment of a Federal Leprosarium is meeting with favor in all parts of the United States. Copies of the resolutions recently adopted by the California State Board of Health, proposing its establishment, have been sent to the governors and to the boards of health of all states. Favorable replies have been received from twenty-six states. Following are extracts from some of the replies that have been received:

Dr. W. S. Rankin, Secretary, North Carolina State Board of Health.

"We are heartily in accord with the principle that leprosy, on account of the few cases of the disease existing in the United States and the unnecessary expense to local governments to take care of one or two cases, is a national health problem and should be dealt with not by the states but by the nation, and a leprosarium is the only solution of the problem."

Dr. John L. Burkart, Secretary, Michigan State Board of Health.

"I have been urging the establishment of a National Leprosarium for some time. I was an officer in the Medical Corps of the United States Army from 1889 to 1909; served in the Philippine and Hawaiian islands; am familiar with the entire leprosy question and know how necessary it is to establish a state or national institution. Counties can not take this question up in the same manner as they do the tuberculosis and other questions."

Dr. John S. Fulton, Secretary, Maryland State Department of Health.

"Aside from the consideration of the health of the people of the United States, one must admit humanitarian reasons for a real state of preparedness in this country, to take care of lepers. All of the cases which have occurred in Maryland, and the not infrequent records appearing in the public prints concerning the inadequate and rather inhumane handling of lepers, would seem to indicate that in this country we do not mitigate, but compound the misfortune of those who appear among us, suffering from this ancient plague.

"We have no leprosy problem at the present moment. We have encountered the problem of a single leper. We have, on three occasions, had to handle the disease. Each time there has been only one patient, and no proper means of isolation. We are heartily in favor of a Federal Leprosarium."

Dr. S. St. Clair Drake, Secretary, Illinois State Board of Health.

"In view of recent experiences with cases of leprosy in this state, and recognizing the fact that difficulties which have confronted the California health authorities in handling cases of this disease are common to practically every state in the Union, this Board heartily concurs in the recommendations set forth in the resolutions adopted by the California State Board of Health and will lend whatever influence it

can do to bring about the establishment of a National Leprosarium. In the opinion of this Board, the establishment of such an institution is an urgent need and is the only practical solution of a vexatious problem now confronting a number of our northern states, including Illinois."

Dr. S. J. Crumbine, Secretary, Kansas State Board of Health.

"While we have no known cases of leprosy in Kansas at the present time, we have had cases in the past and in all likelihood will probably have cases in the future. It would relieve both the state and local communities of a very vexatious problem if there existed a national institution to receive and properly care for these cases."

Dr. Ennion G. Williams, Commissioner of Health, Commonwealth of Virginia.

"It would be very expensive for the state to maintain an institution for a few lepers. As the cases that may appear in Virginia are not likely to be contracted here, but either in other states or in other countries, and have escaped the vigilance of the government authorities, it would seem to be reasonable and proper that the United States Government should establish and maintain an institution to care for the victims of leprosy that may be found in the states.

I believe that the State Board of Health would heartily endorse a National Leprosarium and would co-operate with the State Board of Health of California and other states in urging this before congress."

Dr. Gardner T. Swarts, Secretary, Rhode Island State Board of Health.

"We had one case of a boy bottled up for five years, costing the small town \$1,500 to \$1,800 a year, and had the Public Health Service had it at its disposal, it would have been an economical proposition as well as a charity to the patient to have referred the case to a National Leprosarium.

Any congressional movement which will be started, this Board is ready to assist as it has done in years past."

Dr. Herman M. Biggs, Commissioner of Health, State of New York.

"At the present time there exists no institution in this country where lepers can be cared for. Neither the state nor the local authorities have any facilities anywhere for their care. Although leprosy is communicable only under certain peculiar, as yet undetermined, conditions, yet public opinion and public safety certainly require that such cases should not be allowed at large. The disease is usually incurable and finally terminates in death only after a number of years of illness. The Department of Health of New York City some years ago undertook to care for four or five cases of leprosy in one of its hospitals, but after keeping them under observation for several years was obliged to abandon the attempt.

In view of all the facts I would strongly recommend that the State of New York should support the proposition of the California State Board of Health for the establishment of a Federal Leprosarium."

David I. Walsh, Governor of Massachusetts.

"I have been very much interested in this suggestion, as I believe that the care of lepers should be a federal function. In our own commonwealth the per capita cost for lepers is enormous, and this, of course, can be greatly reduced by concentrating the lepers in a Federal Leprosarium."

SOFT DRINKS.

Labeling of Artificial Beverages Which Contain Artificial Flavor, Artificial Color or Preservatives.

By E. J. LEA, Director, Bureau of Foods and Drugs.

Section 6 of the California Pure Food Act provides that food and liquor shall be deemed mislabeled or misbranded in any of the following cases:

“Sixth. If, having no label, it is an imitation or adulteration, or is sold or offered for sale under a name, designation, description or representation which is false or misleading in any particular whatever * * *.”

Soda waters and other soft drinks are covered by this section of the law.

At the present time both genuine and artificial soft drinks are sold throughout this State. Some of these beverages are made from genuine fruit products with added sugar, carbonated water, etc. By far the larger proportion of soft drinks, however, are made partly, or altogether, from artificial materials.

The law permits the use of certain coal-tar colors, as well as several animal and vegetable colors in soft drinks, provided they are not used to conceal damage or inferiority; and provided, further, that they are not used to imitate natural products unless their presence is declared on the label. The permitted coal-tar colors include three red, one yellow, one orange, one green and one blue. These colors, with their combinations, are capable of producing a great variety of colors. At the present time practically all of the colors found in soft drinks are permissible, whereas in the past a great many colors of a harmful character were used. Whenever an artificial color is used to imitate a natural food product, this fact should be made known to the purchaser by a suitable label or placard.

Many Artificial Flavors Used.

A great variety of artificial flavors are now used in the preparation of soft drinks. These flavors are composed largely of synthetic ethers and are used to imitate the flavors of nearly all common fruits. According to reliable authorities who have investigated imitation fruit flavors carefully: “These ethers are usually much more pungent and penetrating than the fruits which they imitate, and, while lacking the delicacy and refinement of the original fruits, serve to impart a certain semblance of the genuine flavor in a convenient and highly concentrated form.” The use of harmless imitation fruit flavors is permitted, provided such fact is properly declared by a label or placard.

Benzoate of soda, as a preservative, is allowed in soft drinks, provided its presence and amount are declared on the label or placard.

Saccharin is not permitted in beverages. Saccharin is an artificial sweetener which has a sweetening power approximately five hundred times greater than sugar. This material has no nutritive value. It has been found to be injurious to health and its use is, therefore, prohibited.

Shortly after the California Pure Food Act became effective in this State dealers in soda fountain drinks procured labels in conformity with the law, and labeled their bottles of fountain syrups. This was soon found to be a great inconvenience as the bottles required frequent washing and the labels were often removed by this process.

This matter was brought before the State Board of Health, and, after careful consideration the Board concluded to permit the use of a placard or sign giving the necessary information instead of requiring the labeling of each bottle.

Many Fail to Display Signs.

Dealers, generally speaking, took advantage of this regulation and displayed signs at their soda fountains. A large number, however, either through carelessness or ignorance, neglected to display signs containing the necessary information, and in numerous cases their signs were not displayed after they had received personal instructions from the inspectors of the State Board of Health. Some dealers prepared small and inconspicuous signs, many of which could not be read by the purchaser from his position in front of the soda fountain. Still others concealed their signs partly, or altogether, with various articles, such as bottles, glasses, pictures, advertising matter, etc. Some signs were made of gray paper with the lettering in white ink and the contrast was not sufficient to make the letters legible to the purchaser. In a great many instances inspectors failed to find the signs after careful search, and upon asking the proprietor if he had a sign displayed would receive various replies, such as: "Yes, I have a sign, but I don't know just where it is now"; "I have a sign up there," pointing to a position close to the ceiling, so high that no ordinary purchaser would observe it. Or the frequent answer: "Yes, I had a sign, but the girl must have thrown it out when she washed the fixtures." In some places the sign was found to be the same color as the woodwork on which it was hung, and for that reason was not conspicuous. The signs found by our inspectors have varied from five inches to three feet in width and from three inches to more than three feet in length. Some signs contained the necessary information, while others were incomplete or misleading, and still others indicated by their wording that the artificial colors and flavors had been used because they were required by the government.

Sign Approved by Board.

In view of these conditions it was obvious that a large percentage of the public was buying imitations or artificial soft drinks which were sold as genuine fruit products. These soft drinks were not injurious, but they were composed of inferior materials and did not in any way compare with the drinks made from genuine fruit products. It was, therefore, deemed advisable to ascertain as nearly as possible the character of the sign that would reasonably present the necessary facts to purchasers. In order to receive the practical views of soda water manufacturers, a meeting was called at the State Food and Drug Laboratory, to which the interested parties were invited. At this meeting a tentative sign was outlined and subsequently submitted to the State Board of Health for approval. This sign has now been approved by the Board and it is recommended that signs, substantially

in this approved form be used by all dealers in soft drinks. It may be necessary, in some cases, to modify the items appearing on the sign, but the size of the sign and the size and style of the type should remain the same. The sign approved by the State Board of Health is a white card fourteen inches wide and ten inches high. The letters are black, bold faced type. The small letters are five-sixteenths of an inch in height and the capital letters are three-eighths of an inch. The arrangement of the items on the sign are as follows:

ARTIFICIALLY COLORED	
Lemon Soda	Cherries
Orange Soda	Grenadine
Strawberry Ice Cream	
Creme de Menthe	Orange Water Ice
Crushed Strawberries	
ARTIFICIALLY COLORED AND FLAVORED	
Cherry Soda	Banana Soda
Fruits and Fruit Syrups	
Contain 1/10 of 1% Sodium Benzoate	

The soda water manufacturers and wholesalers have arranged to have a large number of these signs printed, in order to supply their customers. All dealers in soft drinks, who use artificial colors, artificial flavors or preservatives, should display in a conspicuous place at their soda fountain a sign which conforms to the above specifications.

During the past few months about one hundred soda water dealers have been cited to appear before the State Board of Health for violating the provisions of the law in regard to selling imitation beverages as genuine. This article is prepared with a view to calling this matter to the attention of the soft drink dealers in order that they may avoid the expense and inconvenience of answering a summons for violating the food law.

Premises Must Be Sanitary.

In conclusion, I would like to call attention to one of the most important features in connection with the dispensing of soft drinks, and that is the sanitary condition of the glassware, towels, and utensils. It frequently happens that the glassware and dishes, instead of being thoroughly washed in hot water are merely rinsed in a bucket or tank of cold water. Such a process is not sufficient to sterilize the dishes, which may have been used by persons suffering from certain contagious diseases, and such diseases might easily be transmitted to other persons.

The Food Sanitation Act requires that all places of this character be kept in a thoroughly sanitary condition, and the State Board of Health is taking active steps to improve such conditions. Many of the dealers in soft drinks, ice cream, etc., maintain a high standard of cleanliness, but, on the other hand, some dealers are found who do not seem to realize the necessity of thorough sanitation.

The public can be of great assistance in bettering conditions of this character by personally investigating them, or by sending information concerning insanitary places to the State Food and Drug Laboratory, Berkeley, California.

DR. EDWARD LIVINGSTON TRUDEAU.

By E. L. M. TATE, Director, Bureau of Tuberculosis.

After forty years of battling in a hand-to-hand fight with the Captain of the Men of Death, as Bunyan called tuberculosis, Dr. Edward Livingston Trudeau, the greatest general of them all, passed away at Saranac Lake, on November 15th. In spite of the fact that forty years ago, one stormy night, a guide carried a man into Paul Smith's, whom he said weighed as much as a sheepskin, this same man lived, beyond the hope of most of us, "to see his dreams come true." In this hunter's shack, forty miles from a railroad, this man, then only twenty-six years old, spent the winter. He had contracted tuberculosis while nursing an older brother. Here, nursed by the late E. H. Harriman and Lewis Livingston, Dr. Trudeau made such progress that after three years of life in the Adirondacks, he hunted like a woodsman and they tell the story that he was the quickest man with the gloves that ever entered a backwoodsman's amateur ring. Meanwhile, he doctored the woodspeople so successfully that they sent for him to doctor the sick cows, horses and dogs.

Four years after that first visit to Paul Smith's he moved to Saranac Lake, then a little hamlet, just a sawmill and six houses. New York physicians, hearing of the success of his own cure, sent him patients, and he dreamed of the time when the little \$350 shack he built on Mount Pisgah might become a real sanatorium. It became a reality later, in the way of a million dollar semiphilanthropic sanatorium that ran a deficit of from \$10,000 to \$20,000 per year. Doctor Trudeau never took a cent for his work as director. Meanwhile, the wave of agitation for open windows in offices and homes began to spread. To Doctor Trudeau's influence we owe the five hundred sanatoria for the treatment of tuberculosis in this country.

He was the pioneer in the United States in advocating those theories of Brehmer and Dettweiler, who insisted that climate is not the only and all important factor in the treatment of tuberculosis.

HIS SCIENTIFIC WORK.

He was one of the first scientific workers in America to obtain the tubercle bacillus in pure cultures, after Koch's announcement of its discovery in 1882. With no apparatus, no books, and as he said himself, an indifferent medical education, he repeated Koch's inoculations. He had to keep his guinea pigs in a hole in the ground, and to keep them from freezing warmed them with a kerosene lamp. He grew his tubercle bacillus in a home-made thermostat heated by a kerosene lamp that exploded one night and burned his records, his house, his guinea pigs, in fact, everything he had. George C. Cooper of New York then built him a real laboratory.

It was the work done in this laboratory and an article published in the *New York Times* the morning Friedmann arrived that put a large number of physicians on their guard. Doctor Trudeau and his assistants had studied and discarded as useless the product that Friedmann tried to commercialize.

Perhaps the word "commercialize" expresses more than any other word the very antithesis of what Doctor Trudeau and his followers have done.

Climbing the mountains one day some years ago, to reach Saranac Lake, I was reminded of Rossetti's poem "Does the road wind uphill all the way—will there be beds for all who come?" There is no other place where the real spirit and ideals of all that ought to be in medicine and particularly in the treatment of tuberculosis are such as you find at Saranac Lake. If you travel elsewhere and know the stories of patients too sick to be up, who can not find even a night's lodging, and then see Saranac with its porches, with every building planned to care for the tuberculous, and best of all you will appreciate the knowledge of the sick that "there are beds for all who come." If Doctor Trudeau had accomplished but one thing, this would have been enough, for it was his great heart and spirit that removed the sting and stigma from tuberculosis and that put in its place the hope of cure or arrest in the progress of the disease.

"THE BELOVED PHYSICIAN."

Driving down the mountain one day, an all day's ride, the driver, in speaking of Saranac, told his story. It was the usual one; sick and discouraged, with most of his money gone, he had reached Saranac expecting to say the usual thing "that he had a cold" so he might find some one to take him in. To his surprise he found everything was different. He found a brotherhood. He spoke of Doctor Trudeau with tears rolling down his cheeks. They called him up there, "The Beloved Physician."

Saranac still tells stories of Robert Louis Stevenson when he occupied the Baker cottage there. Saranac, long after the rest of us are dead, will live. The ideals of Doctor Trudeau and his associates will live and already his dreams, aside from his wonderful accomplishments, have become the dreams of tuberculosis workers everywhere. An ideal to give the man or woman every chance to recover and if not that, every chance for comfort. Doctor Trudeau must have been the bravest of them all, for while caring for others he had to see all of his children but one die. But to have lived to be sixty-seven years old, to have conquered tuberculosis for forty years, to have put hope, enthusiasm and ideals into the lives and hearts of thousands of people, both sick and well, was indeed an opportunity.

When the newspapers made the announcement of his death and stated that "all Saranac was plunged in deepest gloom," they neglected to add that with such a life of usefulness and service as his has been "That to live in hearts we leave behind is not to die."

VITAL STATISTICS WORK IN CALIFORNIA.*

By GEORGE D. LESLIE, Statistician.

Statistics have been termed the handmaid of prophecy and vital statistics the bookkeeping of humanity. The books kept in California include births, deaths and marriages and yield sound predictions on the great events of life—the cradle, the grave and the wedding altar.

The State Bureau of Vital Statistics was organized in 1905, and California immediately won from the United States Bureau of the Census the honor of recognition as a registration state for deaths along with Pennsylvania and three others admitted in 1906. Until the admission of Washington in 1908, California was one of three registration states west of the Mississippi River and the only such state beyond the Rocky Mountains. Moreover, there is a sharp contrast between mortality statistics for the two registration states on the Pacific coast. The death rate for Washington has ranged widely between merely 7.9 and 10.0 per 1,000 population, while the rate for California has varied slightly at higher levels only from 13.4 to 14.6. The California death rate was below that for the whole registration area in 1906 to 1911, though somewhat above it in 1912 and 1913.

Birth registration, deficient at first, has improved year after year in California, the total more than doubling between 1906 and 1914 in the steady rise from 20,974 to 46,012 and the rate advancing from 10.3 to 16.7. In the race between the Stork and the Scythe, births first surpassed deaths somewhat in 1911 but by 1914 the excess of births over deaths rose to over one-fifth (22.6 per cent). The California death toll was 29,303 or 14.4 per 1,000 population in 1906, against 37,537 or only 13.4 per 1,000 in 1914, increases appearing annually except for a small decline between 1908 and 1909 and a sharp drop between 1913 and 1914, when the death total decreased by 1,062 or 2.8 per cent. Marriages numbered 21,317 or 10.5 per 1,000 inhabitants in 1906, against 31,902 or 11.5 per 1,000 in 1914, a decrease of 1,266 or 5.5 per cent appearing between 1907 and 1908 while all other years showed successive gains but with increases very small and rates actually declining in both 1913 and 1914.

The registration system established in 1905 has been modified by a new statute in effect August 8, 1915, that follows even more closely the Model Law on this subject and which, though altering standard blanks and local districts somewhat, will make no particular change in statistical tabulations. However, descriptions here given of blank forms and registration districts relate to conditions under the law of 1915.

The California birth and death certificates are based upon forms recommended by the United States Bureau of the Census and the marriage certificates follow similar lines. Each blank contains identifying particulars such as names of persons and parents as well as the place and date of the event in addition to statistical data proper. The birth certificate includes the following statistical items: sex of child; whether twin or other plural birth; for each parent the race, age, birth-place, and occupation (by both particular kind of work and general

*Read at a special meeting of the American Statistical Association, Stanford University, August 13, 1915.

nature of industry); number of children born to the mother as well as number still living; and also inquiries on the use of a prophylactic for ophthalmia neonatorum. The death certificate contains for each decedent the sex, race, marital condition, age, occupation (by both particular kind of work and general nature of industry), birthplace, parental birthplaces, cause of death, and length of residence (in the registration district and in California) together with special information for hospitals on source of infection. The marriage certificate likewise includes the following items for both groom and bride: race, age, former marital condition with number of present marriage, occupation, birthplace, and parental birthplaces.

The Local Registrars forwarding to the central bureau each month original certificates for births and deaths in their respective districts are the Health Officers of the 34 cities having freeholders' charters, the clerks of the remaining 205 cities and incorporated towns, and the county recorders for the outside or unincorporated portions of the several counties. Original certificates for all marriages are likewise sent each month to the State Registrar but only by the recorders of the 58 counties in California. The duty of filing a certificate with the Local Registrar is fixed by law upon the physician or midwife attending a birth within thirty-six hours thereafter, upon the undertaker in case of a death within seventy-two hours or before any disposition is made of the body, and upon the minister or justice performing a marriage ceremony within three days of the event.

Some idea of the extent of tabulations in the State Bureau of Vital Statistics is given by a general summary of the facts for California in 1914 to appear in the next Biennial Report. Similar figures are shown regularly in these reports for three main divisions—northern, central and southern—and eight minor geographic divisions of the State and are generally available likewise from data published for individual counties as well as for leading cities.

Males preponderate greatly among the inhabitants of western states, the proportion of males to 100 females having been 125.5 for California in 1910 against merely 106.0 for the United States. Consequently, among decedents here the per cent male is over 60.0 (61.4) as compared with only about 55.0 for the whole registration area. For California births, however, the per cent male is only 51.7, being 51.5 among white babies against 53.6 among non-Caucasians, mainly Japanese. The per cent of male births is 51.2 for California mothers, 51.1 for other Americans, and 52.4 for foreign born white mothers.

With reference to race, the per cent of non-Caucasians is 8.1 for babies born, 5.4 for persons dying, and 4.6 for those marrying. The Japanese birth total, though only 719 in 1910, has risen rapidly to 2,874 for 1914. While births and deaths of Japanese occur at various places throughout California, the Japanese weddings take place to the extent of nineteen-twentieths of all at San Francisco. Picture brides from Japan find expectant grooms assembled at this port, the marriage certificates being filed in dozens after the arrival of trans-Pacific steamships.

For the white elements of the population, the nativity is as follows in per cents:

	California	Other states	Foreign born
Births (mothers) -----	31.0	39.3	29.7
Deaths (decedents) -----	26.5	42.0	31.5
Marriages (brides) -----	36.4	43.3	20.3

Comparison of percentages by nativity for white mothers and brides indicates that native Californians and other Americans show less strongly among women bearing children than among those marrying, while, conversely, foreign born women contribute relatively more to birth rates than to marriage totals. The same contrasts appear when widowed and divorced brides are omitted and the comparison is made between all mothers and only first marriage brides. It seems, therefore, that in this State as elsewhere the fecundity of foreign born women surpasses that of the natives.

In regard to age, tabulated only for deaths, it appears that people live longer or die older in California than in the United States generally, the median age for decedents in this State being 49.6 years against the last published figure of 42.7 years for the whole registration area. In 1911 to 1914 the median age for California decedents was successively 48.8, 49.2, 49.4, and 49.6, indicating an upward movement even though slight. While the median age is somewhat less for males than for females in the entire registration area, 42.2 years against 43.4, it is considerably higher for men than for women in California, 50.1 years against 47.3.

For decedents of 15 years and over the per cent distribution by marital condition is as follows for each sex:

	Single	Married	Widowed	Divorced	Unknown
Males -----	31.5	45.3	14.5	1.8	6.9
Females -----	11.9	48.7	36.9	1.3	1.2

In further reference to marital condition, the status of grooms and brides may be noted in the following per cents:

	Single	Widowed	Divorced
Grooms -----	83.1	8.5	8.4
Brides -----	79.2	10.0	10.8

The per cent of divorced brides, 10.8, marks a steady annual rise from only 7.4 in 1907. Divorced women outnumber divorced men even more than widows exceed widowers. Although widows outnumbered divorced women remarrying in the period 1906 to 1911, yet for the years 1912 to 1914 the divorcees have surpassed widows in increasing degree. However, the per cent divorced is higher for brides born in

other states than for native Californians, though lowest of all among foreign born brides.

Classification of marriages by number in order shows that there are many more weddings between bachelors and widows or divorcees than between single women and widowed or divorced men. Moreover, bachelors unite with divorcees much more than with widows, although spinsters marry widowers about as much as they wed divorced men. Yet where persons previously married wed again with others of prior matrimonial experience the mate for either sex is somewhat more often one who was widowed rather than divorced.

Analysis of mortality statistics by occupations for California can not be presented satisfactorily here, the tabulations for this State being made by ninety specific occupations for twelve groups of diseases. Discussion of causes of death is also necessarily omitted at this time. The annual tabulations published for the State cover each of the 189 titles of the International Classification by sex, race, nativity and age periods, while figures are also given for geographic divisions as well as for individual counties and chartered cities on total deaths classified by twenty-eight principal causes.

Reference must be made, however, to valuable data compiled for California on the length of residence of decedents, this information being particularly important in connection with the heavy mortality from tuberculosis in this State. The "Great White Plague" causes about 14 per cent of all deaths in the whole State and about 17 per cent of the deaths in Southern California. Yet over half the tuberculosis victims in Southern California had lived in the State less than ten years. In fact, the length of residence was under one year for 13.4 per cent of these decedents and less than six months for 8.7 per cent of them in 1914, the per cents for 1914 being much lower than averages for preceding years on account, perhaps, of decreased migration of tuberculosis sufferers in a year of financial stringency.

Furthermore, nearly only one-fourth (23.4 per cent) of all California decedents with a residence of under one year were persons who finally succumbed here to tuberculosis contracted undoubtedly elsewhere. Hence, the very healthfulness of the California climate is a factor in swelling the general death rate or apparent mortality. People come here to save or lengthen lives surely doomed elsewhere.

Federal care and control is undoubtedly the solution of the comparatively simple sanitary problem of leprosy in the United States, and should be insistently advocated by medical organizations and other organizations within whose purview come matters of public health.

DR. WILLIAM ALLEN PUSEY.

THE REPORTING OF TYPHOID FEVER.

By DR. WILBUR A. SAWYER, Secretary.

The first warning of an impending outbreak of typhoid fever is usually the receipt from physicians of reports of cases of the disease. Without early reports the local and state health departments are usually powerless to avert even those epidemics, which could have been easily prevented, but for the carelessness or deliberate violation of the law on the part of some physician. The failure to report a case of typhoid fever in an employee at a dairy may result in more deaths than a skillful physician could prevent in years of practice.

But we must not lay all the blame at the door of the careless physician. There is a striking parallelism between the completeness of reporting and the efficiency of the local health department. Where typhoid fever cases are regularly investigated by the department and physicians are kept informed regarding their duties under the law and are asked to co-operate, a large proportion of the cases are reported. Where the health officer is not qualified for his work or is inactive, most of the physicians fail in their public duty. While individual physicians at times do serious harm by disregarding the law concerning the reporting of communicable diseases, an incompetent or inactive health officer is almost certain to be responsible for many needless deaths each year. In the first place, he does not stimulate reporting by physicians, and, in the second place, he is unable to read the danger signs in the few reports received and to take appropriate action.

Full Time Health Officer Necessary.

A refreshing contrast is furnished by the efficient, well-trained, full-time health officer. He keeps in touch with the members of the medical profession and receives co-operation far beyond the requirements of the law. He receives prompt information which enables him to check outbreaks of disease at their inception.

The table below gives figures for California cities having a population of over 25,000 and for a few of the counties. In the first column are shown the total number of deaths from typhoid fever in 1914. In the second column are given the number of cases reported. On the basis of these figures the third column shows what percentage of the reported cases died. Since the average mortality in easily recognizable cases of typhoid fever is only about ten per cent, a marked increase above this figure shows deficient reporting. In the fourth column this deficiency in reporting is better shown. The number of cases is given in percentages of the total number of cases, estimated on the basis of the number of deaths and a ten per cent case mortality. Where there were less than ten cases the percentage figures are omitted. The estimated number of cases, upon which the fourth column is based, is conservative, as the true average case mortality in typhoid fever, including obscure cases, is probably about five per cent. The figures are therefore to be regarded as conservative even in cities where the presence of hospitals receiving patients from surrounding territory increases the proportion of severe cases.

In heavy type are shown the figures for communities which did not report one-fourth of the estimated number of cases. The showing of

Sacramento reflects great credit on the health officer and physicians of that city, for they brought about practically complete reporting of cases of typhoid fever. As a result of the study of their statistics measures were taken which have decidedly reduced the typhoid fever death rate in that city.

As the statistics are for the year 1914 conditions in many places have doubtless already been improved.

Typhoid Fever—1914.

	Number of deaths	Number of cases	Deaths per 100 reported cases	Cases reported; per cent of the estimated number of cases
Cities with estimated population of 25,000 and over—				
Alameda -----	2	19	10.5	95
Berkeley -----	4	27	14.8	67
Fresno -----	5	11	45.4	22
Long Beach -----	3	20	15.0	67
Los Angeles -----	33	256	12.9	78
Oakland -----	13	86	15.1	66
Pasadena -----	3	7		
Sacramento -----	23	260	8.8	113
San Diego -----	10	11	90.9	11
San Francisco -----	57	274	20.8	48
San Jose -----	3	4		
Stockton -----	12	14	85.7	11
Counties—				
Amador -----	3	22	13.6	73
Butte -----	4	7		
Colusa -----	6	16	37.5	27
Contra Costa -----	9	24	37.5	27
Fresno -----	14	27	51.8	19
Imperial -----	17	45	37.7	26
Kern -----	7	11	63.6	16
Kings -----	4	90	*4.4	225
Orange -----	13	35	37.1	26
Riverside -----	6	29	20.6	48
Santa Clara -----	11	24	45.8	22
Shasta -----	2	6		
Siskiyou -----	3	7		
Solano -----	3	12	25.0	40
Sonoma -----	10	108	*9.2	108
Stanislaus -----	4	11	36.4	27
Tehama -----	4	14	28.6	35
Tulare -----	5	23	21.7	46
Yolo -----	7	20	35.0	29

*Nearly all cases reported because of the presence of an epidemic.

Health officers and physicians are urged to do their part in bringing about complete reporting, not only of typhoid fever, but also the other reportable diseases listed in the inner page of the back cover of every issue of the Monthly Bulletin.

LEGAL RESPONSIBILITY OF MUNICIPALITIES AND EMPLOYERS FOR TYPHOID FEVER.

A number of court decisions regarding damages for the pollution of streams for supplying contaminated water for domestic purposes, and concerning the liability of an employer in the matter of an employee contracting typhoid fever while performing services incidental to his employment have recently been handed down by state supreme courts.

According to a decision rendered by the Wisconsin Supreme Court, typhoid fever is an occupational or industrial disease. The suit in which this decision was rendered grew out of the death of an employee of a lumber company in the State of Wisconsin. Water supplied in the lumber mill, where the employee worked, was drawn from the city supply and also from an intake pipe in the river. It was claimed that through carelessness, contaminated water was drawn from the river and became mixed with the water from the city water works, because of improper connecting pipes. It was claimed that the lumber company, through negligence, caused and permitted this employee to drink of this polluted water, thereby causing him to be sick with typhoid fever, resulting in his death. It was held that the drinking of the polluted water by the employee was an accidental occurrence, while he was performing services growing out of, and incidental to, his employment, and that diseases caused under these circumstances are injuries within the meaning of the Workmen's Compensation Act.

Must Supply Pure Water.

In New Jersey the Supreme Court recently handed down an opinion in the case of *Jones vs. Mount Holly Water Company*, in which the plaintiff, who was a customer of the water company, contended that three of his children became ill, the illness being caused by contamination of the water with sewage. The opinion in part reads:

"It must be borne in mind that the defendant company was in the water-supply business for profit. The plaintiff had paid for the supply which he was to receive, in advance. Hence it became the duty of the defendant company to give to the plaintiff water fit for domestic purposes, including fitness for drinking. Water is a necessity of life, and one who undertakes to trade in it and supply customers stands in no different position to those with whom he deals than does a dealer in foodstuffs. He is bound to use reasonable care that whatever is supplied for food or drink shall be ordinarily and reasonably pure and wholesome.

* * * * *

Actual notice or knowledge of the unwholesomeness of the water was not an essential element to be proven in order to establish the defendant's liability. It was sufficient if there was testimony tending to show that the defendant, in the exercise of reasonable care, might have discovered the unwholesomeness and dangerous condition of the water."

City Responsible for Stream Pollution.

The Court of Appeals of Kentucky recently decided that the city of Henderson, Kentucky, was liable for damages resulting to property owners along a small stream into which the city discharged its sewage. Refuse from a distillery was, for some time, discharged with the city sewage, killing fish and making the water unfit for drinking purposes and creating a stench. The court held that as the city had permitted the distillery to connect with the city sewer without regulation, the distillery was absolved, but the city was held to be responsible for the damage done.

These decisions indicate that there can be no doubt regarding the responsibility of a concern supplying water for domestic purposes, whether it be public or private. It is only by demanding pure water that the public will be able to secure it. These decisions indicate that public opinion demands the enforcement of laws pertaining to stream pollution, and in this way only, can pure drinking water be obtained.

SMALLPOX AND CLOSING PUBLIC SCHOOLS.

There is no provision in the Vaccination Act for the closing of the public schools when smallpox exists in any school district. In some sections of the State, however, school trustees take it upon themselves to exclude all pupils from attendance upon the schools as soon as smallpox appears in the district. This is manifestly unfair to vaccinated pupils and such action is without justification. Superintendent of Public Instruction Edward Hyatt has written the following opinion in the matter:

"The apportionment of funds depends upon the average daily attendance of the school for the preceding year. The average daily attendance is lowered when for any reason there are a large number of absences. When the school is dismissed the attendance is not counted at all, therefore, the absentees do not show upon the records. The average daily attendance is determined upon the number of days school is actually held.

"School trustees are authorized under the law to declare a vacation and close school whenever in their judgment good reason exists therefor. In the case of an epidemic, the trustees are obliged to depend on the health authorities for technical information and professional guidance. When the health authorities close the school, the trustees are in the habit of following their advice and depending upon them. Certainly they should do the same in regard to opening the school during the prevalence of an epidemic disease.

"In my opinion, a school board does not have any good or legal reason for closing a school when the public health authorities instruct them that closing the school is not necessary. They would not be justified in considering the possibility of a decreased attendance as good and sufficient reason for closing a school and depriving the greater part

of the children of their educational privileges. The proper procedure for school trustees in these matters of public disease is to depend upon the advice of the regular health authorities in the same way that they would in any other technical matter about which the people in general are in doubt."

AN OUTBREAK OF TYPHOID FEVER AT SANTA BARBARA.

Following several deaths from typhoid fever in Santa Barbara, at the request of the City Board of Health, Dr. J. C. Geiger, Acting Director of the Bureau of Communicable Diseases, was detailed, November 12, 1915, to make an investigation into the cause of the epidemic.

All probable sources of infection, with the exception of the city water supply, were rapidly ruled out. It was finally determined that the most probable source of infection was the water supply, laboratory examinations showing that a polluted supply was pumped into the city mains from a polluted well, with probable further infection due to the leaking of the storage caisson and consequent seepage into the same from surrounding soil.

The first water supply, from the old city tunnel in Cold Spring Canyon, was found to be safe for drinking purposes, as far as bacteriological examination could show. The second supply obtained from a tunnel in the Coast Range Mountains in the drainage basin of the Santa Ynez River, was also found to be safe for drinking purposes, as far as bacteriological examination could show. A third supply, rarely used, comes from the De La Guerra wells, seven in number, from two hundred to seven hundred feet deep, all of which discharge into a concrete and brick caisson, from which the water is pumped directly into the city mains. The wells are situated in what is practically a swamp, the city refuse dump being about seventy-five feet from the wells, fronting on the swamp. The surrounding region is populated, and a sewerage system has only recently been established. Only one of the seven wells was found to be polluted. Bacteriological examination showed that it contained an amount of pollution which would make it dangerous at all times if used for drinking purposes. Investigation showed that the direct cause of the epidemic was, in all probability, to be found in the pollution of this well No. 2, by which the city water supply was polluted to such an extent, in spite of the dilution, that altogether at least twenty cases of typhoid fever developed in Santa Barbara.

Recommendations for the checking of the water supplies by bacteriological examinations and sanitary inspection were made and the city authorities have taken steps to prevent any further possible pollution.

SANITATION IN THE NATIONAL FORESTS.

Many of our streams used for drinking purposes originate in National Forests. The attention of campers and others is called to the following extract from pages 29 and 30 of the Use Book of the United States Forest Service for 1915:

“Reg. P-4. The following acts are prohibited: Having or leaving in an exposed or insanitary condition on National Forest lands camp refuse or débris of any description, or depositing on National Forest lands or being or going thereon and depositing in the streams, lakes, or other waters within or bordering upon the National Forests any substance or substances which pollute or are liable to cause pollution of the said streams, lakes, or waters.

“Every precaution will be taken by forest officers to protect the public health. All persons on National Forest lands are liable to trespass proceedings if insanitary conditions result from their presence.

“The main danger to be guarded against is that of typhoid fever, resulting from toilet accommodations which drain to waters used for domestic purposes, and from the exposure of refuse of all kinds to flies.

“In large or permanent camps latrines must be dug in suitable locations remote from the water, and disinfectants should be used freely. All camp refuse must be disposed of, either by burying or burning. In small temporary camps suitable precautions should be observed, and refuse of all kinds must be kept well away from the water. The carcasses of all dead animals when they are a menace to public health should be buried or burned. (See Reg. G-27.)

“Forest officers will enforce compliance with Regulation P-4 on the part of all campers, stockmen, permittees, and other persons traveling through or occupying National Forest lands.”

CAMPAIGN AGAINST RABIES IN MODOC AND LASSEN COUNTIES.

By L. B. MALLORY, Assistant to the Secretary.

The epidemic of rabies among dogs and coyotes in Modoc and Lassen counties, is under the control of the California State Board of Health with the active co-operation of the United States Forestry Service and the Biological Survey. A brief history of the presence of rabies in California leading up to the epidemic in Modoc County will be of interest.

Although rabies became prevalent in most sections of California, beginning back as far as the summer of 1909, appearing only in domestic dogs, until recently the northern counties appeared to have escaped infection. In the latter part of 1914, however, the disease was proven to exist in Shasta and Siskiyou counties. About the year

1910 rabies became epidemic in southern and eastern Oregon, but there the coyote seems to be largely responsible for its spread. The Oregon State Health authorities instituted a vigorous campaign, with the result that the disease is largely under control in that state.

On January 10, 1915, Dr. W. E. Coppedge, County Health Officer of Modoc County, called the attention of Dr. Donald H. Currie, then Secretary of the State Board of Health, to the prevalence of rabies among coyotes in the territory of Oregon and Nevada, bordering on the northern counties of California and to a possible infection in that county. The matter was referred to Dr. W. A. Sawyer, Director of the Bureau of the Hygienic Laboratory, at Berkeley, who made a trip to Alturas, in company with Passed Assistant Surgeon Hurley of the United States Public Health Service. They carried on a thorough investigation of the conditions in Modoc County, making an extensive report to the State Board of Health. From the findings of this report it appeared that the disease was about to spread into Modoc County, due to infection of coyotes from over the Oregon line.

On November 25th, Dr. W. A. Sawyer, the present Secretary of the State Board of Health, received word from the County Health Officer of Modoc County that the rabies situation was serious, and the county was placed under quarantine. A few days later advice was received that the disease had spread into Lassen County and the same order was issued for that county.

The Secretary immediately got into communication with the United States Forestry Service and the Biological Survey and enlisted their active co-operation. On November 28th, Dr. Frank L. Kelly of the Hygienic Laboratory and Sanitary Inspector Edward T. Ross, both of the State Board of Health, were on their way to Modoc County to take charge of the campaign. Immediately upon their arrival at Alturas a council of war was held, participated in by E. K. Sans, of the United States Biological Survey; Coert Dubois, W. S. Brown, and W. G. Durbin of the United States Forest Service; Dr. Kelly and Sanitary Inspector Ross of the State Board of Health; the county health officer, supervisors, and cattlemen of Modoc County.

At this meeting plans were made and the following rules adopted to govern the campaign, copies of which were printed for distribution. The State Board of Health under the direction of Dr. Kelly and Sanitary Inspector Ross were given entire charge, Dr. Kelly supervising all technical work and Inspector Ross assuming control of all field operations:

INSTRUCTIONS FOR DISTRICT HUNTERS.

Campaign for Eradication of Rabies in Modoc County.

1. You will kill and bury all dogs found at large. This rule must be rigidly carried out and no exceptions made.
2. You will enter all premises in your district for the purpose of collecting the following data:
 - (a) How many dogs are kept on premises.
 - (b) If dogs are tied or allowed to run the premises.
 - (c) If each dog has a license.

If it is found that the dogs are running the premises at large or that no licenses have been procured, you will notify the owner to keep the dogs properly chained or enclosed and also to procure a county license for each dog.

3. You will inquire as to the prevalence of coyotes in the neighborhood and whether the person being interviewed is doing anything to exterminate them. You will ascertain from all persons you may meet how many coyotes they have shot, trapped, or poisoned. You will also ascertain if any coyotes acting in a peculiar manner have been seen. You will write this information on the back of your daily report sheet.
4. You will notify the party you are interviewing of the campaign for the eradication of rabies and the extermination of coyotes. You will solicit his co-operation and give him any assistance in your power.
5. You will obtain from all stockholders the number of horses, cattle, sheep, hogs and other animals that have been bitten by coyotes or dogs and the number of such that have died of rabies. This information is of great importance and should be carefully noted on the back of your daily report sheet.
6. You will send the scalp of each coyote to the office in Alturas. (This section applies to State employees only.)
7. You will send the head of each animal suspected of having rabies either direct to the State Hygienic Laboratory, Berkeley, California, or to the office in Alturas.
8. You will order supplies from this office in time so as to always have sufficient on hand to carry on your work.
9. You will make out your report daily and forward such reports to the office in Alturas as often as may be convenient, but in any case at least once a week. It is very important that the report blanks be properly filled out and that all other information be plainly written on the reverse side of the report sheet.
10. The United States Forest Service is co-operating with the State in this work and the Ranger in whose district you are, will be your supervising inspector and will advise you and support you in every way possible. In case of any emergency, get in touch with the nearest Ranger, who will communicate with this office and deliver our orders regarding the matter to you.

The county was divided into seventeen districts and a hunter employed and put in charge of each district. The following are the districts as arranged:

Chief Hunter J. M. Stambaugh (b).

No. 1. Fort Bidwell.

District Hunter Leon Hickerson, Fort Bidwell, Cal. (a).

No. 2. Lake City (I).

District Hunter A. C. Mosher, Lake City, Cal. (a).

No. 3. Lake City (II).

District Hunter T. E. Loving (b).

No. 4. Lake City (III).

District Hunter Enoch Reynolds (b).

No. 5. Cedarville.

District Hunter, D. B. Hanks, Cedarville, Cal. (b).

No. 6. Eagleville.

District Hunter F. A. Pickrell (b).

No. 7. Willow Ranch.

District Hunter C. O. Leonard, Willow Ranch, Cal. (a).

No. 8. Davis Creek.

District Hunter F. C. Godfrey, Davis Creek (b).

No. 9. Alturas.

District Hunter Chester Estes, Alturas, Cal. (a).

No. 10. Likely.

District Hunter J. S. Forrest, Likely, Cal. (a).

No. 11. Triangle.

District Hunter W. W. Williams (b).

No. 12. Alturas (II).

District Hunter W. J. Lunsford, Alturas, Cal. (b).

No. 13. Canby.

District Hunter J. E. Warner (b).

No. 14. Steele Swamp.

District Hunter Eli Dale (a).

No. 15. Tule Lake.

District Hunter J. C. Davis (a).

No. 16. Adin.

District Hunter Geo. Harper (b).

No. 17. Lookout.

District Hunter W. A. Warner (b).

(a) Paid by State—(b) Paid by Government.

Each person employed was appointed an inspector, representing the State Board of Health.

Modoc County has an area of 4,097 square miles and Lassen County an area of 4,750 square miles, a combined area greater than that of Massachusetts or New Jersey and nearly three times as large as Delaware and Rhode Island combined. These districts in Modoc County average 241 square miles, making it no easy problem to adequately cover this vast mountainous region.

Upon telegraphic request from Sanitary Inspector Ross and Dr. Kelly the State Board of Health authorized the purchase of Winchester carbines, 100 dozen jump traps, 400 ounces of strychnine, 2,000 gelatine capsules, rubber gloves and other paraphernalia, including bulletins containing information relating to rabies.

No time was lost in getting men into the field and in enlisting aid of ranchers and cattlemen throughout the county.

The State Board of Health wishes to especially mention and commend both the Forest Service and the Biological Survey for their hearty co-operation. The heads of these departments have uniformly instructed their men to carefully follow the orders of Sanitary Inspector Ross.

The Government is furnishing men without cost to the State, and the county authorities are heartily co-operating. A dog tax is levied and under an ordinance the county pays a bounty of \$2.50 for each coyote and \$1.00 for each bob cat, wild cat and lynx killed.

The following directions for poisoning and trapping coyotes prepared by Inspector E. R. Sans of the United States Biological Survey, have been issued:

Poisoning.

Fill No. 1 capsules with strychnine (alkaloid powdered) insert into small pieces of suet or cow's udder about the size of an English walnut, being careful to clean all strychnine from the outside of capsule. These baits should be prepared about forty-eight hours before using and placed in a wooden bucket to let the human scent leave. After baits are ready, take a piece of meat and drag behind a saddle horse, along the foothills across the trails of animals going from the mountains to the meadows and rivers and drop poisoned baits along the trail of drag, using gloved hands or pointed stick. Care must at all times be taken to keep human scent from bait.

Never poison a carcass, but wait until the coyotes have eaten half or more of the flesh, then place poison baits around the carcass from twenty to thirty feet away.

Trapping.

A good trap to use is No. 3 Oneida Jump, which can be bought in lots for about \$4.50 per dozen.

First boil these traps in lye water until clean, then dip in melted beeswax to destroy metal scent.

Select place where coyotes travel coming from the hills, place the traps on any little knoll where clean, just at the side of the trail where the wind will blow from set to trail. Cover traps well, using gloves at all times. Have a small piece of sheepskin about three inches square tied to the stake pin and let that be all that is in sight. Take a piece of sagebrush, make a broom of it and sweep out all tracks and place a few drops of the following scent on the sheepskin:

Place a half pound of raw beef in a wide mouth bottle and let it ferment for about six weeks, or until it is thoroughly decayed and the odor has become as offensive as possible. When decomposition has reached the proper stage, add one quart of animal oil—prairie dog or oil from fat coyote is good—then add one ounce of pulverized asafetida and one ounce of tincture of Siberian musk or Tonquin musk or one ounce of pulverized castorenni (beaver castor). Mix well and bottle till used.

Thus every means is being employed to stamp out this dread disease, dangerous both to man and beast; and at the present writing the campaign is being prosecuted with great vigor.

Mr. Ross has traveled nearly six hundred miles by horse and auto, instructing hunters, ranchers and cattlemen, gathering data and generally overseeing the work.

Dogs and coyotes, as well as other wild animals, are being killed in large numbers and the heads of all animals suspected of rabies are being sent to the Hygienic Laboratory at Berkeley, for examination.

THE DECEMBER MEETING OF THE STATE BOARD OF HEALTH.

The State Board of Health met in Sacramento on December 4th. The following members were present: Dr. George E. Ebright, President; Dr. Fred F. Gundrum, Vice President; Dr. Adelaide Brown; Dr. Robert A. Peers; Dr. Edward F. Glaser, and Dr. Wilbur A. Sawyer, Secretary.

It was decided to hold the January meeting on Saturday, January 8th, as the first Saturday is a legal holiday.

The appointment, previously made by the Secretary, of Mr. E. K. Perry, River Patrol Officer of the city of Sacramento, as Inspector of the State Board of Health, without salary, for the purpose of enforcing the stream pollution laws in connection with the Sacramento River above the city of Sacramento, was confirmed.

Common Drinking Cups and Roller Towels.

By formal motion the State Board of Health instructed the Secretary to request the proper authorities to prohibit the use of public drinking cups and glasses and roller towels in any of the state buildings on the ground that they are a menace to public health.

Sanitation in Canneries.

The Board passed a resolution approving the orders on sanitation in canneries, as presented in tentative form by the Industrial Welfare Commission, and expressed a willingness to give further consideration to the regulations when they had been passed in their final form by the Commission after the hearing required by law.

Milk Sanitation.

The matter of the enforcement of the newer legislation on milk sanitation was discussed. By formal resolution the Board announced that the provisions of chapter 742, Statutes of 1915, requiring the grading of milk, tuberculin testing of cows, and the pasteurization of milk from cows which have not been tuberculin tested, would be enforced as far as it devolves upon the State Board of Health to do so, and the Secretary was instructed to confer with the State Dairy Bureau and the State Veterinarian regarding the enforcement of the law. This law goes into effect October 1, 1916.

Hookworm.

By the following resolution the Board announced its intention to undertake an investigation of hookworm in the mines of California in January.

“Resolved, That the State Board of Health will undertake an investigation of hookworm in the mines of California, in co-operation with the State Industrial Accident Commission, beginning in the latter part of January, 1916, and that a member of the staff of the Bureau of Communicable Diseases will be detailed to represent the Board in the field in connection with this investigation.”

Health Officers' Reports.

Several instances of neglect of local officers to perform their official duties, including the transmission of weekly communicable disease reports as required by law and the regulations of the State Board of Health, were called to the attention of the Board. The Secretary was instructed to consult with the Attorney of the Board relative to an effective procedure for bringing this undesirable condition of affairs to an end, and the Secretary was empowered to act in the premises.

By formal resolution the Board authorized the Secretary to give physicians or Health Officers, who are remiss in their obligations under the law, an opportunity to appear before the Board and show cause why they should not be prosecuted.

Wasserman Tests.

The following resolution was passed:

“Resolved, That any licensed physician in the State of California desiring a Wasserman test in the case of a patient who is a resident of California may obtain same from the Bureau of Communicable Diseases.”

Transportation of Carriers.

The following regulation was passed:

“Resolved, That diphtheria carriers and typhoid carriers shall be permitted to travel only with the consent of the local health officers at the point of departure and of destination, and only with precautions for the protection of the public health especially required by the health officer at the point of departure or by the State Board of Health.”

Malaria.

Regulations for the control of malaria were read and discussed and adopted by the Board.

Rabies.

The Secretary made a report on the rabies campaign carried out by the State Board of Health with the co-operation of the Federal authorities in Modoc County. The County was under State quarantine and had been organized into seventeen districts, each under the supervision of a State or Government officer. The destruction of coyotes and of dogs found at large was being rapidly and effectively carried forward.

Registration Fees.

The matter of the refusal of Los Angeles County to pay the fees required by a recently enacted law to Local Registrars was considered and the following resolution was passed:

“Resolved, That the Board authorize the Secretary to instruct the Attorney for the Board to appear in any action in the event the officers of Los Angeles County continue to refuse payment of fees to deputy registrars under chapter 378, Statutes of 1915.”

Sewage Permits.

On the recommendation of Mr. Gillespie, Director of the Bureau of Sanitary Engineering, revocable permits for the discharge of sewage under specified conditions were granted to the Santa Fe Railroad Company at Calwa, and to Mr. Alexander Brown, owner of the Oriental quarter of Walnut Grove.

Polluted Streams.

The suggestion of Mr. Gillespie that in addition to placarding polluted streams, provision be made for placing drinking faucets at convenient places along navigable streams, was favorably discussed and was left in the hands of the Secretary with power to act.

Federal Tuberculosis Subsidy.

The passage of the Federal bill establishing a subsidy for nonresident indigent tuberculosis patients was unanimously advocated by the Board in the following resolution:

WHEREAS the death rate from tuberculosis in California and other southwestern states is very large, reaching, for example, the rate of 362.5 per hundred thousand population in one county of California and a corresponding rate of 192.5 for the State as a whole; and

WHEREAS this high death rate is largely due to the influx, from all other states of the Union, of tuberculous patients, who are, most of them, in advanced stages of the disease and financially unable to provide proper care for themselves; and who, therefore, wander from county to county unable to exercise proper precautions to prevent infecting others; and

WHEREAS the only opportunity for the great majority of tuberculous patients to obtain necessary hospital care is at public expense in county hospitals, as is shown by the following facts, that seventy-five per cent of the patients dying of tuberculosis in California have an annual family income of less than one thousand dollars, and that twenty-seven per cent of all children who have received state aid as orphans or half-orphans in California in the year 1914 lost one or both parents through tuberculosis; and

WHEREAS there are only 906 beds available for tuberculous patients in county hospitals in California, while the average annual number of deaths is over 5,000; and the counties containing the largest proportion of cases from other states are unable to bear alone the double burden of caring properly for the nonresident and the resident tuberculous, even with the recently provided state aid for the latter; and a similar lack of bed capacity exists in the other southwestern states; and

WHEREAS recent investigations by the United States Public Health Service show that there is an annual migration of between 10,000 and 15,000 tuberculous persons to the western and southwestern states, and that from 30 to 50 per cent of these patients die within six months after arrival, and further, that from 40 to 90 per cent of all deaths from tuberculosis in the west and southwest are natives of other states; therefore be it

Resolved, That the California State Board of Health endorses the federal bill which will provide for the payment of a subsidy to hospitals maintaining standards of equipment, diet, and care, established by the United States Public Health Service, and caring for tuberculous patients who are not legal residents of the state in which they are; and be it further

Resolved, That copies of these resolutions together with copies of the federal bill, be transmitted to the Secretary of the Treasury of the United States, to the Surgeon-General of the Public Health Service, to the Representatives in Congress from California, to the Boards of Health of all the states, to the American Public Health Association, to the American Medical Association, and to the National Association for the Study and Prevention of Tuberculosis.

Tuberculosis Hospital Standards.

A statement of standard which must be met by County Hospitals before they will be accredited and thereby will become eligible for the tuberculosis subsidy, was presented by Miss E. M. L. Tate, Director of the Bureau of Tuberculosis, and was approved by the Board.

Tuberculosis Field Workers.

On the recommendation of Miss Tate the Board requested authorization of the Civil Service Commission for the appointment of a Field Worker in the Bureau of Tuberculosis, effective January 1, 1916, and the Secretary was instructed and authorized to make the appointment subject to the approval of the proper authorities.

Maternity Hospitals.

The Board considered a request from the State Board of Charities and Corrections, and instructed the Secretary to arrange with Miss Jammé, Director of the Bureau of Registration of Nurses, for co-operation of the Bureau with the Board of Charities and Corrections in the matter of investigating whether the maternity register required by the latter Board is being kept and the semi-annual report is being made by hospitals which take maternity cases and maintain nurses' training schools.

Nurses' Examinations.

The plan for holding examinations for the registration as registered nurses, was altered by the following resolution:

“Resolved, That after January 1, 1907, examinations for registration as registered nurses be held in April and October of each year simultaneously in San Francisco, Sacramento and Los Angeles, in co-operation with the State Civil Service Commission, under the terms of a resolution of this Board passed on October 2, 1915, and the communication of Mr. J. M. Hunter of the State Civil Service Commission, dated December 3, 1915; and

Be it further resolved, That the examination announced for February and June, 1916, and an additional examination in October of that year be held in the same manner.”

On the recommendation of the Director of the Bureau of Nurses, one hundred and four certificates as registered nurse were granted. These nurses had passed satisfactorily the examination held on October 12th and 13th in San Francisco.

The following hospitals, having been inspected by Miss Jammé and found to meet the requirements of the Board, were accredited for one year from date: Methodist Hospital, Los Angeles; Fairmount Hospital, San Francisco; Union Labor Hospital, Eureka.

Foods and Drugs.

On recommendation of Mr. E. J. Lea, two firms were granted licenses to operate cold storage warehouses.

The Board then considered violations of the Food and Drug laws and held the hearings set for this day. In each instance the Board determined by vote the disposition of the case.

WILBUR A. SAWYER, M.D.,
Secretary.

REPORT OF THE BUREAU OF ADMINISTRATION FOR NOVEMBER, 1915.

By W. A. SAWYER, M.D., Director.

PUBLIC HEALTH ACTIVITIES OF MEMBERS OF THE BOARD.

Dr. George E. Ebright, President of the Board, gave an address November 19th, upon public health matters in California before the Friday Morning Club of Los Angeles. Upon the same day he attended, with Dr. W. A. Sawyer, Secretary of the Board, a conference with the health officers of Los Angeles County.

Dr. Ebright and Dr. R. A. Peers, November 20th, attended a conference with a committee of the Fresno County Medical Society in Fresno, concerning medical attendance in the new Fresno County Tuberculosis Hospital.

November 23d, Dr. Ebright attended a conference in San Francisco with Mr. DuBois, United States District Forester, concerning the campaign against rabies in Modoc and Lassen counties.

Dr. Robert A. Peers, on November 3d, gave an address before the Placer County Teachers' Association at Auburn on "Medical Inspection in Schools."

Dr. Wilbur A. Sawyer, Secretary of the Board, on November 3d, made an investigation of smallpox at Elmira.

November 9th, Dr. Sawyer read a paper "The Typhoid Death Rate" before the Northern District Medical Society in Sacramento.

November 17th Dr. Sawyer held a conference, together with Dr. Edward F. Glaser, with the members of the State Industrial Accident Commission in San Francisco, relating to joint hookworm investigations in the mines of California. The same day, Dr. Sawyer held a conference with Dr. Hassler concerning the reporting of cases of communicable disease.

November 18th Dr. Sawyer held separate conferences in Los Angeles with Dr. Brem, Bacteriologist of the Southern Division of the State Hygienic Laboratory, with Mr. Kemper B. Campbell, attorney of the Board, and with Dr. L. M. Powers, Los Angeles City Health Commissioner.

November 19th Dr. Sawyer spoke at a luncheon of the Friday Morning Club of Los Angeles concerning the work of the State Board of Health.

November 20th Dr. Sawyer conferred with the City Health Officer of Bakersfield and the Health Officer of Kern County concerning the establishment of mosquito abatement districts with the assistance of the State Board of Health. On the same day, a conference with the city and county Health Officer at Visalia concerning the establishment of like districts was held.

November 21st Dr. Sawyer held a conference with the Health Officer of Fresno County at Fresno, and with Dr. W. W. Cross, Bacteriologist of the San Joaquin Branch of the State Hygienic Laboratory.

November 24th Dr. Sawyer held a conference in San Francisco with Dr. George E. Ebright, President of the Board, relative to the control of rabies in Modoc and Lassen counties.

SANITARY INSPECTIONS.

EDWARD T. ROSS, Sanitary Inspector.

During November sanitary inspections of the sewage disposal systems at Healdsburg, Santa Rosa and Sonoma were made. Several slaughterhouses in the vicinity of Napa were inspected and a large number of summer resorts in Sonoma and Mendocino counties were visited, including the following, where satisfactory sanitary conditions were found: Agua Caliente Inn Resort, Cazes' French Resort, Clement's Resort, Cabanot Hotel Resort, Skaggs Hot Springs Resort, Italian-American Hotel Resort, Heidelberg Inn Resort, Fetters Springs Resort, The Oaks Resort, Cantor's Resort, The Gables Resort, Hotel Bellevue Resort, Fest Farm Resort, S. Ziefman Resort, Manuck's Resort, Crane's Resort, Villa Savoy Resort, Paul's Resort and Family Hotel Resort. The faults that have been corrected in all cases pertain to the disposal of sewage, garbage, rubbish, etc. In many of the above premises the garbage and rubbish was allowed to collect in large piles and in several instances the sewage was being discharged into running streams, which is in direct violation of the stream pollution law.

Sanitary Inspector Ross left for Alturas November 28th where, during the last two days of the month he started the organization of a campaign against coyotes in Modoc and Lassen counties because of the presence of an epidemic of rabies.

MORBIDITY REPORTS.

GUY P. JONES, Morbidity Statistician.

Smallpox.

Distribution of Cases reported during November, 1915.

Counties and cities	Number new cases reported during month	Deaths	Vaccination history of cases			
			Number vaccinated within seven years preceding attack	Number last vaccinated more than seven years preceding attack	Number never successfully vaccinated	Vaccination history not obtained or uncertain
Imperial County -----	1	-----	-----	-----	-----	1
Los Angeles County ----	1	-----	-----	-----	1	-----
San Fernando -----	1	-----	-----	-----	1	-----
San Bernardino County --	-----	-----	-----	-----	-----	-----
San Bernardino -----	3	-----	-----	-----	1	2
San Francisco -----	1	-----	-----	-----	1	-----
Santa Clara County ----	1	-----	-----	1	-----	-----
Solano County -----	6	-----	1	-----	5	-----
Totals -----	14	-----	1	1	9	3

Typhoid Fever.*Distribution of Cases reported during November, 1915.*

Counties and cities	Number of new cases reported during month	Counties and cities	Number of new cases reported during month
Alameda County -----		Sacramento County -----	
Hayward -----	2	Sacramento -----	1
Oakland -----	4	San Bernardino County -----	
Butte County -----	1	Redlands -----	2
Colusa County -----	4	San Diego County -----	
Contra Costa County -----		San Diego -----	5
Richmond -----	4	San Francisco -----	17
Fresno County -----		Santa Barbara County -----	
Clovis -----	1	Lompoc -----	3
Kern County -----	1	Santa Clara County -----	2
Bakersfield -----	2	Sonoma County -----	
Taft -----	2	Santa Rosa -----	1
Los Angeles County -----		Tulare County -----	
Compton -----	1	Porterville -----	1
Los Angeles -----	18	Ventura County -----	
Pasadena -----	1	Santa Paula -----	1
Pomona -----	3		
Marin County -----	2	Total -----	80
Monterey County -----	1		

Epidemic Cerebrospinal Meningitis.*Distribution of Cases reported during November, 1915.*

Counties and cities	Number of new cases reported
Fresno County -----	
Clovis -----	1
San Francisco -----	1
Total -----	2

Poliomyelitis (Infantile Paralysis).*Distribution of Cases reported during November, 1915.*

Counties and cities	Number of new cases reported during month
Fresno County -----	1
Los Angeles County -----	2
Los Angeles -----	7
San Bernardino County -----	
Needles -----	1
San Francisco -----	1
Total -----	12

Scarlet Fever, Measles, Diphtheria, Dysentery and Other Diseases.

Distribution of Cases reported during November, 1915.

Disease	Total number of new cases reported during the month in the entire State
Scarlet fever -----	314
Measles -----	47
Diphtheria -----	380
Chickenpox -----	286
Erysipelas -----	21
Gonococcus infection -----	25
Malaria -----	14
Mumps -----	124
Pneumonia -----	122
Syphilis -----	25
Tuberculosis -----	424
Tetanus -----	1
Typhoid fever -----	80
Trachoma -----	12
Whooping-cough -----	71
German measles -----	1
Leprosy -----	2

A certain dusky tropical queen was wont to say that she did not fear the invasion of the white man, for she had two mighty generals, The Fever and The Forest. Malaria has been one of civilization's greatest foes, both in time of war and in peace. Where shot and shell have slain their thousands, malaria has slain its tens of thousands. Malaria is the chieftain of the army of disease. Even Napoleon acknowledged its supremacy when he wrote his minister of war on the occasion of the disastrous English Welcheren expedition: "We are rejoiced to see that the English themselves are in the morasses of Zealand. Let them be kept only in check, and the bad air and fevers peculiar to the climate will soon destroy their army." It is said that the French crowed over the expedition "with force of reason, the bitterness of sarcasm, and the playfulness of ridicule." How accurately Napoleon's prediction was verified is well known.

—DEADERICK.

REPORT OF THE BUREAU OF VITAL STATISTICS.

GEORGE D. LESLIE, Director.

Births, Deaths and Marriages for October.*

State Totals and Annual Rates.—The following table shows for California as a whole the birth, death and marriage totals for the current and preceding months in comparison with those for the corresponding months of last year, as well as the annual rates per 1,000 population represented by the totals for the current and preceding months. The rates are based on an estimated midyear population of 2,854,727 for California in 1915, the estimate having been made by the Census Bureau method with slight modifications.

Birth, Death and Marriage Totals, with Annual Rates per 1,000 Population, for Current and Preceding Months, for California: October.

Month	Monthly total		Annual rate per 1,000 population 1915
	1915	1914	
October—			
Births -----	4,188	3,838	17.3
Deaths -----	3,181	2,915	13.1
Marriages -----	2,789	2,757	11.5
September—			
Births -----	4,296	4,041	18.3
Deaths -----	3,008	2,804	12.8
Marriages -----	2,887	2,826	12.3

The birth and death totals for October were both considerably greater in 1915 than in 1914, while the marriage total was only a little more this year than last.

Length of Residence.—As to deaths, it may be noted that for the 3,181 decedents in October the length of residence in California was as follows: Under 1 year, 123, or 3.9 per cent; 1 to 9 years, 581, or 18.2 per cent; 10 years and over, 1,367, or 43.0 per cent; life, 820, or 25.8 per cent; and unknown, 290, or 9.1 per cent.

County Marriage Totals.—The counties showing the highest marriage totals for the month were as follows: San Francisco, 603; Los Angeles, 589; Alameda, 271; Orange, 119; San Diego, 100; Sacramento, 87; Santa Clara, 80; Kern, 78; Fresno, 74; San Joaquin, 58; Marin, 54; Riverside and San Bernardino, each, 52; and Sonoma, 49. The aggregate for San Francisco and other bay counties was 797, against 708 for Los Angeles and Orange counties together.

*NOTE.—The present report is for the month preceding, but one. This order must be followed hereafter, because of the publication of the Bulletin during the early part of the month, before the tabulation of records for the preceding month is completed.

County Birth and Death Totals.—Exclusive of stillbirths in both cases, the birth and death totals for the month were as follows for the leading counties, arranged in decreasing order of birth registration:

County	Births	Deaths	County	Births	Deaths
Los Angeles	943	823	San Diego	113	88
San Francisco	617	586	Contra Costa	86	34
Alameda	405	257	San Joaquin	76	105
Fresno	214	105	Tulare	73	41
Orange	174	54	Humboldt	72	31
Sacramento	142	104	Stanislaus	55	22
Santa Clara	134	119	San Mateo	53	31
San Bernardino	118	106	Ventura	53	30

City Birth and Death Totals.—Birth and death totals, exclusive of stillbirths, are presented similarly for the principal California cities below:

City	Births	Deaths	City	Births	Deaths
San Francisco	617	586	Pasadena	43	43
Los Angeles	602	510	Stockton	43	64
Oakland	274	155	Eureka	40	19
Sacramento	108	92	San Jose	38	29
Berkeley	77	33	Alameda	30	27
Fresno	72	37	San Bernardino	30	33
San Diego	67	65	Pomona	28	17
Long Beach	47	27	Richmond	27	14

Cause of Death.—The following table shows the classification of deaths in California for the current month, in comparison with the preceding month:

Deaths Classified by Sex and Age Periods, with Per Cent by Age Periods for California: October.

Cause of death	Deaths: October	Proportion per 1,000	
		October	September
All causes	3,181	1,000.0	1,000.0
Typhoid fever	29	9.1	9.6
Malarial fever	4	1.3	1.3
Measles	4	1.3	0.3
Scarlet fever	1	0.3	0.3
Whooping-cough	9	2.8	3.0
Diphtheria and croup	20	6.3	7.3
Influenza	15	4.7	1.0
Other epidemic diseases	6	1.9	4.0
Tuberculosis of lungs	342	107.5	114.0
Tuberculosis of other organs	65	20.4	19.6
Cancer	248	78.0	72.8
Other general diseases	126	39.6	43.2
Meningitis	21	6.6	7.3
Other diseases of nervous system	228	71.7	73.8
Diseases of circulatory system	688	216.3	187.2
Pneumonia and broncho-pneumonia	215	67.6	58.2
Other diseases of respiratory system	47	14.8	15.3
Diarrhea and enteritis, under 2 years	99	31.1	34.6
Diarrhea and enteritis, 2 years and over	42	13.2	14.0
Other diseases of digestive system	133	41.8	48.6
Bright's disease and nephritis	205	64.4	69.5
Childbirth	26	8.2	10.0
Diseases of early infancy	125	39.3	40.2
Suicide	92	28.9	25.9
Other violence	258	81.1	102.7
All other causes	133	41.8	36.3

In October there were 688 deaths, or 21.6 per cent of all, from diseases of the circulatory system, and 407, or 12.8 per cent, from various forms of tuberculosis, heart disease thus leading tuberculosis greatly.

Other notable causes of death in October were: Violence, 350; diseases of the digestive system, 274; diseases of respiratory system, 262; diseases of nervous system, 249; cancer, 248; Bright's disease and nephritis, 205; and epidemic diseases, 88.

The deaths from epidemic diseases were as follows: Typhoid fever, 29; diphtheria and croup, 20; influenza, 15; whooping-cough, 9; malarial fever and measles, each, 4; and all other epidemic diseases, 7.

The deaths from the three leading epidemic diseases reported for the month were distributed by counties as follows:

Typhoid fever		Diphtheria and croup		Influenza	
Butte	1	Alameda	2	Alameda	1
Colusa	1	Kern	2	Contra Costa	1
Contra Costa	1	Los Angeles	5	Fresno	1
Fresno	2	Monterey	1	Los Angeles	2
Los Angeles	4	Orange	1	Marin	1
Orange	1	Riverside	1	Sacramento	1
Placer	1	San Bernardino	1	San Benito	1
Riverside	1	San Diego	1	Santa Barbara	3
Sacramento	5	San Francisco	3	Santa Cruz	1
San Bernardino	1	San Mateo	1	Siskiyou	1
San Diego	1	Ventura	1	Tulare	2
San Francisco	3	Yolo	1		
San Joaquin	1			Total	15
Santa Barbara	1	Total	20		
Shasta	1				
Solano	1				
Sonoma	1				
Stanislaus	2				
Total	29				

Geographic Divisions.—The following table presents data for geographic divisions, including the metropolitan area, or San Francisco and the other bay counties (Alameda, Contra Costa, Marin and San Mateo), in comparison with the rural counties of Northern and Central California:

Deaths from Main Classes of Diseases, for Geographic Divisions: October.

Geographic division	Deaths: October										
	All causes	Epidemic diseases	Tuberculosis (all forms)	Cancer	Diseases of nervous system	Diseases of circulatory system	Diseases of respiratory system	Diseases of digestive system	Bright's disease and nephritis	Violence	All other causes
The State	3,181	88	407	248	249	688	262	274	205	350	410
Northern California	328	12	33	14	33	67	28	28	22	44	47
Coast counties	181	3	18	10	27	38	16	13	14	16	26
Interior counties	147	9	15	4	6	29	12	15	8	28	21
Central California	1,674	46	200	138	120	384	169	141	85	184	207
San Francisco	586	9	77	59	34	138	58	50	26	60	75
Other bay counties	342	7	33	35	25	88	35	27	17	38	37
Coast counties	207	4	17	21	20	69	13	12	7	21	23
Interior counties	539	26	73	23	41	89	63	52	35	65	72
Southern California	1,179	30	174	96	96	237	65	105	98	122	156
Los Angeles	823	15	115	75	59	180	47	60	81	83	108
Other counties	356	15	59	21	37	57	18	45	17	39	48
Northern and Central California	2,002	58	233	152	153	451	197	169	107	228	254
Metropolitan area	928	16	110	94	59	226	93	77	43	98	112
Rural counties	1,074	42	123	58	94	225	104	92	64	130	142

Sex, Race and Nativity.—The proportion of the sexes among the 3,181 decedents in October was: Male, 1,948, or 61.2 per cent; and female, 1,233, or 38.8 per cent.

The race distribution of decedents was: White, 3,003, or 94.4 per cent of all; Japanese, 63; Chinese, 58; negro, 39; and Indian, 18.

The 3,003 white decedents were classified by nativity as follows: California, 772, or 25.7 per cent; other states, 1,204, or 40.1 per cent; foreign countries, 941, or 31.3 per cent; and unknown, 86, or 2.9 per cent.

Sex and Age Periods.—The following table shows the age distribution, by numbers and per cents of deaths, classified by sex:

Deaths Classified by Sex and Age Periods, with Per Cent by Age Periods for California: October.

Age period	Deaths			Per cent		
	Total	Male	Female	Total	Male	Female
All ages -----	3,181	1,948	1,233	100.0	100.0	100.0
Under 1 year-----	335	178	157	10.5	9.1	12.7
1 to 4 years-----	112	60	52	3.5	3.1	4.2
5 to 9 years-----	37	18	19	1.2	0.9	1.6
10 to 19 years-----	99	50	49	3.1	2.6	4.0
20 to 29 years-----	248	169	79	7.8	8.7	6.4
30 to 39 years-----	325	215	110	10.2	11.0	8.9
40 to 49 years-----	360	247	113	11.3	12.7	9.2
50 to 59 years-----	415	258	157	13.1	13.2	12.7
60 to 69 years-----	467	297	170	14.7	15.3	13.8
70 years and over-----	783	456	327	24.6	23.4	26.5

This table shows that relatively more females than males died at the age periods under 20 years as well as at 70 years and over, while relatively more males than females died at the age periods from 20 to 69 years.

The importance to the world at large of the subject of malaria is evidenced by the fact that two of the seven Nobel prizes in medicine which have been awarded have been granted for discoveries in malaria—to Ross in 1902, and to Laveran in 1907.

—DEADERICK.

REPORT OF THE BUREAU OF COMMUNICABLE DISEASES FOR NOVEMBER, 1915.

J. C. GEIGER, M.D., Assistant Director.

Infantile Purulent Conjunctivitis or Ophthalmia Neonatorum.

When one considers the fact that there are over 100,000 cases of blindness distributed over the United States, one-tenth of which can be attributed to ophthalmia neonatorum, the seriousness of the disease is plainly manifest. Ophthalmia neonatorum is an infectious and preventable disease. While other bacteria may be the causative factor, the disease in most cases arises from gonorrheal infection usually acquired during or shortly after birth. Recognizing the seriousness of this evil, the California State Board of Health has been instrumental in obtaining the passage of an act by the State legislature to prevent blindness from this disease. Particular attention is called to section 3 in this act:

SEC. 3. It shall be the duty of the local health officer:

1. To investigate each case as shall be filed with him in pursuance with this act, and all such cases as may come to his attention.

2. To report all cases of ophthalmia neonatorum coming to his knowledge, and the result of all such investigations as he shall make to the state board of health, in such form as said board shall direct.

3. To conform to such rules and regulations as the state board of health shall promulgate for the purpose of carrying out the provisions of this act.

Again, the California State Board of Health has, under the direction of Dr. Edward F. Glaser, a member of the Board, and Dr. J. C. Geiger, Assistant Director of the Bureau of Communicable Diseases, prepared an outfit for free distribution to institutions and physicians throughout the State. These outfits can be procured from the local depositories of the Bureau of Communicable Diseases located in drug stores in many cities of the State of California. Also, this outfit can be had upon application to the Bureau of Communicable Diseases at Berkeley by any person engaged in the practice of obstetrics. The outfit is simple but effective and consists of two beeswax ampules containing one per cent solution of silver nitrate, with full directions for its use. A copy of the law passed by the State legislature will accompany this outfit.

There is no doubt that health is fostered by legislation and education, and these are most important if we are to keep healthy the children born. A comprehensive study of the statistics relative to blindness in the new born makes plain how many cases can be prevented. The enforcement of the law, which is quoted in part above, and the uniform use of the prophylactic distributed free by the California State Board of Health will mean real progress in the prevention of blindness.

A Milk-Borne Epidemic of Typhoid Fever in Richmond.

In an epidemic of typhoid fever investigated in the city of Richmond, Contra Costa County, the source of infection was conclusively demonstrated as coming from a dairy. A paragraph from the special report to the California State Board of Health on this outbreak of typhoid fever is quoted below:

The cases of typhoid fever occurring in Richmond, twelve in number, were traceable to the milk coming from Dairy A. In contrast there were no cases of typhoid fever in the city of Berkeley traceable to the same milk supply, notwithstanding the fact that 600 gallons of milk, probably infected with the typhoid bacillus, were supplied daily to Substation No. 2 in Berkeley. This is undoubtedly due to the fact that the milk supplied to Substation No. 2 in the city of Berkeley was pasteurized. This constitutes a unique experiment with human beings—accidental, of course, but demonstrating conclusively the practicability of pasteurization of milk supplies as a method of diminishing typhoid fever. The remarkable protection that pasteurization gave to customers of Substation No. 2, thousands in number, who were supplied with milk so treated, is an indisputable argument against the use of raw milk when it is not possible to compel thorough medical examination of dairy employees at frequent intervals.

From the above it can be deduced that a bacterial count as a standard for the cleanliness of milk is insufficient protection against outbreaks of typhoid fever. The sense of security it gives is fallacious when one considers the many pathogenic organisms that may be present and yet not demonstrable in a bacterial count alone. Next to polluted water, there is no more prolific source of infection with disease than contaminated milk.

Ordinarily a milk epidemic is explosive in its outbreak, as this was, the infection being carried to all users of a given supply at practically the same time, thus causing a relatively large number of them to develop the disease simultaneously. Ordinarily the number of cases in a milk-borne outbreak is large, but in the Richmond outbreak, as well as in an outbreak in Colusa in May, 1915, the number was smaller than would have been expected, as only a small proportion of the users of the infected milk developed the disease.

Division of Biological Examinations.

Summary of Examinations made in the California State Hygienic Laboratory during the month of November, 1915.

Condition suspected	Positive	Negative	Inconclusive	Total
Main Laboratory at Berkeley:				
Anthrax -----	1	8	-----	9
Diphtheria (diagnosis) -----	69	107	25	201
Diphtheria (release) -----	151	116	9	276
Diphtheria (school investigations) ¹ -----	17	24	8	49
Gonococcus infection -----	22	23	3	48
Malaria -----	-----	1	-----	1
Rabies -----	5	4	6	15
Syphilis (Wasserman test)-----	14	61	9	84
Tuberculosis (sputum examinations)---	12	27	-----	39
Typhoid (Widal test)-----	18	48	3	69
Miscellaneous -----	1	1	1	3
				794
Northern Branch at Sacramento:				
Diphtheria (diagnosis) -----	6	46	-----	52
Diphtheria (release) -----	9	16	-----	25
Malaria -----	2	1	-----	3
Tuberculosis (sputum examinations)---	3	4	-----	7
Typhoid (Widal test)-----	3	8	2	13
				100
San Joaquin Valley Branch at Fresno:				
Diphtheria (diagnosis) -----	9	43	5	57
Diphtheria (release) -----	26	59	3	88
Diphtheria (school investigations) ² ---	1	39	-----	40
Malaria -----	-----	2	-----	2
Tuberculosis (sputum examinations)---	2	7	-----	9
Typhoid (Widal test)-----	-----	9	-----	9
				205
Southern Branch at Los Angeles:				
Diphtheria (diagnosis) -----	42	253	10	305
Diphtheria (release) -----	13	23	1	37
Diphtheria (school investigations) ³ ---	14	99	2	115
Gonococcus infection -----	-----	1	-----	1
Syphilis (Wasserman test)-----	-----	-----	1	1
Tuberculosis (sputum examinations)---	6	9	-----	15
Typhoid (Widal test)-----	1	18	2	21
				495
Total number of examinations-----	-----	-----	-----	1,594

¹Cultures taken from school children in Alturas, 49.²Cultures taken from school children in Strathmore, 40.³Cultures taken from school children in Watts, 11; Graham School, 39, and the Rowan State School, Los Angeles County, 65.

Division of Preventive Therapeutics.

Pasteur Treatment for the Prevention of Rabies by the State Hygienic Laboratory during the month of November, 1915.

	Treatment commenced	Treatment completed
Main laboratory at Berkeley-----	1	0
Northern branch at Sacramento-----	0	0
San Joaquin Valley branch at Fresno-----	0	0
Southern branch at Los Angeles-----	0	0
Laboratory of Sacramento Board of Health, by deputized bacteriologist-----	0	0
Laboratory of San Francisco Board of Health, by deputized bacteriologist-----	0	0
Laboratory of Los Angeles Board of Health, by deputized bacteriologist-----	2	0
Laboratory of San Diego City Board of Health, by deputized bacteriologist-----	0	0
Laboratory of Letterman General Hospital, Presidio, by deputized bacteriologist-----	0	0
Laboratory of United States Naval Hospital, Mare Island, by deputized bacteriologist-----	0	0
	3	0

Vaccine for the Prevention of Typhoid Fever issued by the State Hygienic Laboratory during the month of November, 1915.

Number of physicians to whom vaccine was sent-----	14
Number of complete treatments sent-----	245

Public Health Instruction.

Participation in Instruction in Public Health during November, 1915.

Main laboratory at Berkeley:	
Bacteriological instruction outfits sent out-----	5
Bacteriological instruction outfits in use-----	24

Division of Epidemiological Investigations.

Epidemiological Investigations and other Special Investigations during November, 1915.

Main laboratory at Berkeley:	
Special investigations by the Assistant Director-----	2
An investigation of an outbreak of typhoid fever at Santa Barbara.	
An investigation of a reported epidemic of diphtheria at Daly City.	
Special investigations by the Assistant Director and Bacteriologist---	2
An investigation of a milk-borne epidemic of typhoid fever at Richmond.	
Investigation of malaria in California.	

REPORT OF THE BUREAU OF TUBERCULOSIS FOR NOVEMBER, 1915.

By E. L. M. TATE, Director.

The activities of the Bureau this past month has been spent very largely in assisting some of the various towns in the State with their local problems—either in raising money or in helping them with the organization of some new work.

A number of visits have been made at Stockton in reference to the San Joaquin County Hospital, and as soon as some changes are completed, and the medical care and treatment arranged at Fresno, both hospitals will be placed on the eligible list.

In mentioning these hospitals, it is only fair to mention also the splendid spirit of co-operation which has been shown by the boards of supervisors and the physicians in charge of the two institutions.

San Joaquin County has previously had only pupil nurses in the tuberculosis pavilion, and the food has been sent over from the general hospital.

The changes that have been made are,

1. The placing of a trained nurse in charge of the building.
2. A dietitian who looks after the food.
3. A new diet kitchen and bath rooms have been installed, and several things needed for equipment have been purchased.

We feel, now that this has been done, that San Joaquin County need not apologize in any way for the care they are giving their tuberculous poor.

In Fresno County the same spirit has prevailed, and as soon as an additional nurse can be placed in the tuberculosis pavilion, and treatment arranged for, they will be subsidized also.

By far the most gratifying part of this standardization has been the way it has been received. One of the supervisors at a recent meeting said that they did not expect to use the money obtained from the subsidy for anything excepting to give the patients additional comforts.

Meetings have been held in Alameda and Marin counties. Money has been secured from the board of supervisors in Los Angeles County for medicine and special diet for patients attending the clinics. Eighteen hundred dollars was appropriated for this.

It seems impossible for the Health Department and the Los Angeles Society for the Study and Prevention of Tuberculosis to make adequate accommodations for their clinics. The clinics have grown so from month to month that the question of room has become a very serious one.

One of the most gratifying results this month has been the co-operation obtained by the Bureau from the Sacramento Commissioners. From a former resident of Sacramento \$1,200.00 was given with the understanding that the city would make contributions toward the support of another visiting nurse. This has been done, and preparations are being made to open a clinic in a portion of Sacramento where there is a large number of cases of tuberculosis in need of supervision and treatment.

Plans are on foot now to install a nurse at Fresno, and a rural nurse for Marin County. The completion of the work of the Dohrmann memorial fund in providing for a nurse to do some work in Placer County, will mark the beginning of rural nursing in the State—the results and benefits of which can not be overestimated.

The Japanese and Chinese newspapers have co-operated with us in publishing a series of articles to be used previous to the opening of a dispensary in San Francisco. The Japanese Chamber of Commerce and the Chinese Six Companies realize the need of an educational campaign and feel there may be a sentiment created for each of these nationalities to have their own tuberculosis pavilion.

The federal bill is attracting nation-wide attention. Letters are coming in from everywhere.

The more statistics are obtained, the more convinced every one must be that, while California has undoubtedly had its share of the non-resident indigent tuberculous, it is nothing compared to the enormous numbers of indigent sick who have spent less than thirty days previous to their death in Texas, Arizona and New Mexico. The report of the United States Health Service shows that 20 per cent only of the consumptives coming to the west, or southwest, travel in the Pullman cars; 30 per cent in the tourist cars and 30 per cent in the day coaches.

Heartbreaking stories of patients who have gone from house to house, seeking admittance for a night, invariably met with the same answer; and the signs that greet them in hotels, that unless they have a certificate showing they are free from tuberculosis, they can not be admitted. This shows more and more the need of some special place where patients can be accommodated.

In view of the fact that there have been enormous appropriations made by the government for the protection of fish and game, for the elimination of hog cholera, and only recently the millions that have been appropriated to stop the spread of the foot and mouth disease, it would seem that at this time everybody ought to be willing to concentrate his efforts on the passage of this federal bill.

Also our ever-present friend "the lemon" will come in for notoriety this year, a large appropriation is going to be asked for the protection of citrus fruits against some new scale that has recently appeared upon the trees.

In view of these previous appropriations we have every reason to hope that congress will see how serious this non-resident indigent problem is, not only economically, but it is impossible to picture either the hardships or the heartaches that must come to these people, thousands of miles from their friends, many of them dying alone; with the establishment of the subsidy in certain hospitals in each locality, where these non-residents can be sent, it would mean the elimination of all the horrors that all those who live in this country are well aware of.

There may be some opposition to this appeal from *one* group of people only; but their influence—even where they have spent money—is rather small compared with the enormous influence of the people generally throughout the United States who are interested in this problem.

By the time the returns are in from the sale of Red Cross Christmas seals, there will be funds in each locality to continue their present work and to enlarge their activities. Every town in the State is carrying on an active campaign at this time, and not only is the financial help of great assistance, but the educational work, particularly in the schools this year, is going to be of tremendous value.

When one stops to consider that some one dies every three minutes with tuberculosis in the United States, and that one-third of all who die of tuberculosis are between the ages of 18 and 35, the necessity for care and treatment, particularly in the early stages of the disease, must be brought home to the people; and while the patent medicines and the sure cures for tuberculosis are growing fewer and fewer every year, we have in their place, for 1915, 1,500 anti-tuberculosis associations, 600 sanatoria, hospitals and day camps, with a bed capacity of 35,000; 450 tuberculosis dispensaries and clinics, treating annually over 100,000 cases, and several thousand visiting nurses doing educational work in the homes. Besides this, there are 500 open-air schools for tubercular and anemic children; and during the Christmas seal sale the number of anti-tuberculosis workers all over the United States is 500,000, and California this year is doing its share. Every town and every rural school has received its quota of seals and the enthusiastic letters show that the school children of the State are prepared to help us in the work of prevention, just as the supervisors are willing to help us with proper hospitals for relief of those suffering with the disease.

Data in Tuberculosis Cases reported during October.

Age—		Length of residence in California—	
Under 5 years	20	Under 1 year	69
5 to 14	66	1 year	24
15 to 24	112	2 years	33
25 to 34	200	3 years	45
35 to 44	142	4 years	42
45 and over	128	5 years	32
Unknown	33	6 years	28
Sex—		7 years	22
Male	412	8 years	28
Female	289	9 years	25
Marital condition—		10 years	23
Single	304	10 to 20 years	91
Married	261	Over 20 years	91
Widowed or divorced	44	Unknown	148
Unknown	92	Number of persons in family—	
Dwelling—		Families of two	48
Detached	369	Families of three	50
Flat	9	Families from four to fifteen	151
Tenement	77	(Average, five.)	
Boarding	30	Tuberculosis in family—	
Hotel	19	Father	30
Hospital	19	Mother	39
Other	5	Brother	29
Unknown	173	Sister	39
Housing—		Husband	28
Good	159	Wife	6
Fair	109	Children	10
Poor	28	Others	22
Unknown	405	Bacteriological examination—	
Financial condition—		Tubercle bacilli positive	377
Independent	46	Tubercle bacilli negative	91
Wage-earner	179	Not stated	233
Indigent	65	Prognosis—	
Unknown	411	Good	51
Occupational condition—		Bad	99
Good	55	Doubtful	57
Fair	66	Not stated	494
Poor	37	Type—	
Unknown	543	Tuberculosis of lungs	679
Nativity—		Tuberculosis of other organs	52
California	113	Duplicated	30
Elsewhere in United States	270	Totals—	
Foreign	222	Cases reported with data	701
Unknown	96	Reported at time of death or later	33
Race or color—		Total living cases	668
White	603		
Negro	17		
Indian	2		
Chinese	11		
Japanese	11		
Unknown	57		

	Deaths from pulmonary tubercu- losis October	All cases of tuber- culosis reported in October		Deaths from pulmonary tubercu- losis October	All cases of tuber- culosis reported in October
Alameda -----	18	39	Orange -----	4	1
Alpine -----			Placer -----	3	20
Amador -----	4		Plumas -----		
Butte -----	1		Riverside -----	6	3
Calaveras -----			Sacramento -----	14	16
Colusa -----	1		San Benito -----		1
Contra Costa -----	2		San Bernardino -----	18	9
Del Norte -----			San Diego -----	12	10
El Dorado -----			San Francisco -----	65	96
Fresno -----	15		San Joaquin -----	16	22
Glenn -----			San Luis Obispo -----		
Humboldt -----	2		San Mateo -----	5	
Imperial -----	2		Santa Barbara -----	2	
Inyo -----			Santa Clara -----	13	4
Kern -----	5	1	Santa Cruz -----	1	1
Kings -----			Shasta -----	1	
Lake -----	1		Sierra -----		
Lassen -----			Siskiyou -----	1	
Los Angeles (city) --	54	364	Solano -----	2	
Rest of county ----	47	102	Sonoma -----	5	4
Madera -----			Stanislaus -----	2	2
Marin -----			Sutter -----	1	
Mariposa -----			Tehama -----	1	2
Mendocino -----	1		Trinity -----		
Merced -----	1	1	Tulare -----	4	2
Modoc -----			Tuolumne -----		
Mono -----			Ventura -----	2	1
Monterey -----	2		Yolo -----	1	
Napa -----	6	1	Yuba -----		
Nevada -----	1				

REPORT OF THE BUREAU OF SANITARY ENGINEERING FOR NOVEMBER, 1915.

C. G. GILLESPIE, C.E., Director.

During the past month at least two cities in California have instituted regular bacteriological examination of their water supplies upon their own initiative, and curiously enough, these cities are the "end" cities of the State—San Diego and Eureka. Another, Santa Barbara, has made inquiries along this line. The Bureau wishes to take this occasion to point out the great benefit to be derived from this action, and to stimulate other cities in adopting such control. Water purification works, especially, require routine examination to test the effectiveness of the treatment or to enable the operator to reduce the cost of operation and still obtain effective treatment. Supplies drawn from sources to which suspicion is attached should be watched vigilantly in the same way. The Bureau of Sanitary Engineering, through its laboratory, will be glad to co-operate with any towns considering establishment of laboratories, by giving advice concerning laboratory details and methods.

But one favorable bond election for sewage disposal purposes has been reported to this Bureau during the current month, this being at Auburn, where bonds for the construction of a two-story settling tank of the Imhoff type have carried by a large majority.

The city of Eureka has practically completed certain improvements in its filtration plant, deriving a supply from the polluted Elk River. The two most important features are an added coagulating basin to make the alum treatment effective and a chlorination apparatus for disinfection purposes.

The recent action of the State Board of Health in withdrawing protection of the lower Sacramento River has already resulted in benefit to the lower river towns, the city of Sacramento being able to abandon its ordinance requiring residential cesspools and the smaller towns being enabled to provide complete sewerage systems which until this time have been impossible on account of the difficulties of disposal on land. The decision will, however, make it necessary to arrange for bringing pure water to landings so that there shall be no necessity for use of the polluted river water by boats. Extensive placarding will also be carried out to guard the river boats against the dangers of the river supply.

In order to control more effectively the policy of sewage disposal and of furnishing domestic water supplies throughout the State, it will be the policy of the State Board of Health in the future to positively require universal holding of permits from the Board for each of these purposes, for both existing and proposed works. Where conditions are most flagrant, towns and corporations are now receiving orders to file applications for such permits and others will be required to comply with this important provision of the statutes as rapidly as the progress of the work will permit. Expenses of field work necessary to pass on the applications, with the exception of salaries of state officers, office and laboratory work, are borne by the petitioner. It will be of advantage to parties concerned to see that their applications are filed early so that the investigation in any particular locality may be extended to all at the one investigation, thus reducing the pro rata cost to a minimum.

Summary of Work Performed.

Sewage Disposal. Field inspections of the sewage disposal of Auburn into Auburn Ravine and of San Bruno on to low-lying land were made during the month.

Water Works. The water supplies of Huntington Park and of Auburn were investigated in the field.

Stream Pollution. The lower stretches of the Kings River were investigated and numerous samples of the stream taken. These show that the Kings River, though during most of the year a sparkling stream, is subject to so much surface pollution that its purity is deceptive.

Laboratory Work. During the month seventy-nine samples of water were submitted to the Bureau for bacteriological examination. Of these, forty-three showed the presence of pollution, or fifty-seven per cent.

REPORT OF THE BUREAU OF FOODS AND DRUGS FOR NOVEMBER, 1915.

E. J. LEA, Director.

During the month of November four hundred and eighty-six samples were received at the Food and Drug Laboratory. These samples are classified as follows:

Official—

Foods -----	164
Drugs -----	34
Cold storage -----	132
Unofficial -----	156

Official Samples.

Eggs. Among the official food samples were thirty-four samples of eggs which were sold as fresh. Nearly all of these samples were composed of mixed eggs, some of which were rotten, others were stale, many were cold storage, and a very few were fresh.

Noodles. Six samples of alimentary pastes, sold as egg noodles, were received. Some of these samples contained sufficient lecithin phosphoric acid to indicate that approximately one and one-half eggs per pound of flour had been used in their manufacture. Other samples contained little or no lecithin phosphoric acid due to eggs.

Meat. Sixteen samples of meat, consisting principally of chopped meat and sausage, were analyzed. About one-third of these samples contained sulfur dioxide and others contained cereal without the declaration of such material being properly made by a label or placard.

Condiments. Forty-five samples of condiments, consisting of catsup, Worcestershire sauce, pickles, mustard pickles, chow chow, etc., were examined, with the result that nearly all of them showed excessive spoilage. The bacteria in these samples varied from 100,000,000 to 800,000,000 per cubic centimeter. Many of these samples showed excessive mold and some of them were high in yeasts and spores.

Aromatic Spirits of Ammonia. Thirteen samples of aromatic spirits of ammonia were analyzed with much better results than we have had previously. Some of these samples, however, were considerably above the standard, which of course is just as objectionable as if the samples were below.

Camphorated Oil. Five samples of camphorated oil were examined, two of which were up to standard, and the other three were about one-half strength.

Aspirin. Eight samples of aspirin were received. Nearly all contained less aspirin than indicated on the label and several contained no aspirin at all.

Unofficial Samples.

The unofficial samples were as follows:

Flour -----	6
Cheese -----	2
Tomato pulp -----	31
Condiments -----	19
Water -----	7
Tea -----	3
Eggs -----	5
Catsup -----	14
Spices -----	12
Aspirin -----	6
Syrup -----	7
Cereals -----	7
Noodles -----	3
Miscellaneous -----	34
Total -----	156

Nearly one-half of the unofficial samples were submitted by state institutions. The remainder were largely taken from pickle and sauce factories.

Cold Storage.

The cold storage samples were as follows:

Egg whites -----	3
Mixed eggs -----	25
Fish -----	13
Cheese -----	26
Nuts -----	5
Meats -----	9
Poultry -----	40
Butter -----	3
Miscellaneous -----	8

Nearly all of these products had been in cold storage about one year and they were examined to determine their fitness for further storage. The samples of mixed eggs were largely from the southern part of the State, where they had been prepared for cheap restaurant and bakery use. These eggs were either moldy or putrid and all have been destroyed.

The fish samples consisted of salt, brine, and smoked fish, all of which were in good condition.

The cheese samples, also, were in good condition.

The five samples of nuts represented about 10,000 pounds of shelled almonds, peanuts, pecans, and walnuts. Most of these nut meats were in good condition. Some of the lots contained rancid meats and some wormy meats.

The meat samples consisted largely of sweetbreads, which, with a few exceptions, were in good condition.

More than 25,000 pounds of poultry were represented by the forty samples listed. About one-fifth of this amount was condemned as unfit for human consumption.

Articles in Cold Storage Condemned upon Physical and Chemical Examination as Unfit for Food.

Material	Amount	Locality	Condition	Disposition
Sweetbreads -----	698 lbs.	San Francisco	Moldy and dry	Destroyed with coal oil and lime.
Frozen eggs -----	6,990 lbs.	Los Angeles---	Decomposed, moldy, putrid.	Destroyed with coal oil.
Strawberries -----	110 boxes	Los Angeles---	Moldy -----	Destroyed.
Loganberries -----	10 boxes	Los Angeles---	Moldy -----	Destroyed.
Turkeys, ducks and geese -----	2,012 lbs.	San Francisco	Decomposed --	Tanked.
Turkeys -----	2,671 lbs.	San Francisco	Decomposed --	Tanked.
Chickens -----	172 lbs.	San Francisco	Decomposed --	Tanked.
Frogs -----	17 lbs.	San Francisco	Decomposed --	Tanked.

Articles of Food Condemned upon Physical and Chemical Examination as Unfit for Food.

Material	Amount	Locality	Condition	Disposition
Conserva (tomato pulp).	9 tons	San Jose -----	Decomposed, filthy.	Coal oiled.
Catsup and pulp----	40 kegs	San Francisco	Decomposed, filthy.	Destroyed.
	110 bbls.			
Sauerkraut (in bulk)	7,000 lbs.	San Francisco	Decomposed, filthy.	Destroyed.
Olives -----	122 gals.	San Francisco	Decomposed, filthy.	Destroyed.
Coloring matter -----		San Francisco	Nonpermissible	Destroyed.
Vinegar -----	110 gals.	San Francisco	Below standard, filthy.	Destroyed.
Catsup -----	5,200 bots.	San Francisco	Decomposed, filthy.	Destroyed.
Pickles, capers -----	262 bots.	San Francisco	Decomposed, filthy.	Destroyed.
Syrup -----	2½ bbls.	San Francisco	Decomposed, filthy.	Destroyed.
Anchovies -----	½ bbl.	San Francisco	Decomposed, filthy.	Destroyed.
Mexican Hot -----	3 bbls., 1 case	San Francisco	Decomposed, filthy.	Destroyed.
Worcestershire sauce	16 bbls.	San Francisco	Decomposed, filthy.	Destroyed.
Spices -----	50 lbs.	San Francisco	Decomposed, filthy.	Destroyed.
Catsup -----	6 gals.	San Francisco	Decomposed, filthy.	Destroyed.

The materials listed in the above table, with the exception of the nine tons of conserva from San Jose, were taken from the plant of one San Francisco firm. Representative samples of all these products were collected by state inspectors and examined at the State Food and Drug Laboratory. A report was made to the State Board of Health and all of the food products in this establishment were quarantined, pending a complete investigation of the food materials. All of the products which were unfit for human consumption were condemned by the State Board of Health and ordered destroyed.

Some of these products were at least two years old and had not been kept under proper conditions, the result being that excessive spoilage had taken place. The catsups and tomato pulp contained a very large number of bacteria and, in some cases, excessive molds, yeasts, and spores. The bacteria counts range from 100,000,000 to 800,000,000 per cubic centimeter.

The Worcestershire sauce was stored in large wooden tanks which had been left unprotected from dirt, dust, flies, etc. This material contained over 100,000,000 bacteria per cubic centimeter, in addition to the filth.

The olives were decomposed and many of them were rotten.

The State Board of Health received a complaint regarding a food-canning establishment in southern California, which at the time was canning tomatoes and tomato products. Our inspectors made a sanitary inspection of the plant in question and found the conditions to be thoroughly satisfactory. Samples of various products were submitted to the Laboratory and examinations showed that they conformed to the standards. These materials were sound and sweet, and the bacteria, molds, yeasts, and spores were not excessive. The lowest bacteria count was 7,000,000 per cubic centimeter, and the highest 32,000,000 per cubic centimeter.

Name of article	Offense	Accused dealer	Locality
Chopped meat -----	Mislabeled. Contained benzoates not declared.	Fred Lewis -----	Oakland.
Chopped beef -----	Adulterated. Contained sulfur dioxide.	Lewis & Bouterious -----	Oakland.
Chopped meat -----	Adulterated. Contained sulfur dioxide.	J. O. Beggs -----	Bakersfield.
Chopped meat -----	Adulterated. Contained sulfur dioxide.	Chas. G. Koerner -----	Oakland.
Kosher sausage -----	Mislabeled. Contained cereal not declared.	Geo. Kaphan & Sons -----	Oakland.
Egg noodles -----	Adulterated and mislabeled. Consisted of filthy and decomposed animal and vegetable tissue.	A. Sutherland, Inc.; 911 Washington st. -----	Oakland.
Eggs -----	Adulterated and mislabeled. Consisted of decomposed and putrid animal substance.	D. Krasnow; 236 W. First st. -----	Los Angeles.
Eggs -----	Adulterated and mislabeled. Consisted of decomposed and putrid animal substance.	Christopher's Market, W. W. Mills. -----	Los Angeles.
Eggs -----	Adulterated and mislabeled. Consisted of decomposed and putrid animal substance.	K. H. Altoon; 333 W. Fourth st. -----	Los Angeles.
Eggs -----	Adulterated and mislabeled. Consisted of decomposed and putrid animal substance.	Chas. F. Backus; 231 S. Main st. -----	Los Angeles.
Eggs -----	Adulterated and mislabeled. Consisted of decomposed and putrid animal substance.	E. Gerlemann; 721 S. Main st. -----	Los Angeles.
Eggs -----	Adulterated and mislabeled. Consisted of decomposed and putrid animal substance.	Gust. Picoulas & Co.; 827-829 E. Fifth st. -----	Los Angeles.
Eggs -----	Adulterated and mislabeled. Consisted of decomposed and putrid animal substance.	Sam Pawder; 631 S. Main st. -----	Los Angeles.
Eggs -----	Adulterated and mislabeled. Consisted of decomposed and putrid animal substance.	P. Rothschild; 514 E. Fifth st. -----	Los Angeles.
Eggs -----	Adulterated and mislabeled. Consisted of decomposed and putrid animal substance.	Sam Selig; 1148 S. Main st. -----	Los Angeles.
Pork sausage -----	Adulterated. Contained sulfur dioxide over 300 mg. per kilo.	Wing Sung Company -----	Stockton.
Vinegar -----	Adulterated and mislabeled. Substitution of other material or materials for cider vinegar.	American Packing Co.; 48 Treat ave. -----	San Francisco.

Convictions Under the Pure Food Law Reported During November.

Accused dealer	Locality	Product	Charge	Fine
California Paste Company -----	San Francisco	Egg noodles -----	Adulteration and mislabeling	\$10 00
San Francisco Candy Factory, Jim Prongos -----	San Francisco	Peppermint chews -----	Adulteration and mislabeling	10 00
Palace Cafe, L. West and P. Hontas, proprietors -----	Hayward	Coffee -----	Adulteration and mislabeling	10 00
Wing Sung Company, Chung Chick, proprietor -----	Stockton	Pork sausage -----	Adulteration -----	25 00

REPORT OF THE BUREAU OF REGISTRATION OF NURSES FOR NOVEMBER.

ANNA C. JAMMÉ, R.N., Director.

The third examination of nurses for certificate as registered nurse was held in San Francisco October 12th and 13th. One hundred and thirty-eight applicants were present; of this number one hundred and four passed and thirty-four failed. One hundred and twenty-nine were graduates of accredited training schools in California and nine were graduates of accredited schools in other states.

The following table will show the training schools from which the applicants graduated, the number who applied, passed and failed:

Hospital	Number of applicants	Passed	Failed
Alameda Sanitarium, Alameda	1	1	
Agnew Sanitarium, San Diego	2	2	
Angelus Hospital, Los Angeles	7	7	
Buena Vista Sanitarium, San Francisco	2	2	
Burnett Sanitarium, Fresno	3	2	1
California Hospital, Los Angeles	4	4	
Children's Hospital, San Francisco	8	6	2
Columbia Hospital, San Jose	2	2	
Cottage Hospital, Santa Barbara	4	4	
County Hospital, San Jose	1	1	
County Hospital (San Joaquin), French Camp	1	1	
City and County Hospital, San Francisco	5	3	2
County Hospital, Sacramento	2	2	
Dameron Hospital, Stockton	1	1	
East Bay Sanitarium, Oakland	5	4	1
French Hospital, San Francisco	1	1	
Fabiola Hospital, Oakland	5	3	2
German Hospital, San Francisco	1	1	
Good Samaritan Hospital, Los Angeles	2	2	
Hahnemann Hospital, San Francisco	3	3	
Lane Hospital, San Francisco	6	4	2
Los Angeles Infirmary, Los Angeles	1	1	
Mary's Help Hospital, San Francisco	3	3	
Mt. Zion Hospital, San Francisco	2	2	
O'Connor Sanitarium, San Jose	3	3	
Pasadena Hospital, Pasadena	2	2	
Pacific Hospital, Los Angeles	1	1	
Ramona Hospital, San Bernardino	1	1	
Santa Ana Hospital, Santa Ana	2	2	
St. Helena Sanitarium, Sanitarium	5	4	1
St. Luke's Hospital, San Francisco	4	4	
St. Mary's Hospital, San Francisco	4	2	
St. Joseph's Hospital, Stockton	2	1	1
Sequoia Hospital, Eureka	3	2	1
St. Francis Hospital, San Francisco	22	9	13
San Antonio Hospital, Upland	1	0	1
University of California Hospital, San Francisco	4	3	1
White Hospital, Sacramento	2	1	1
Battle Creek Sanitarium, Battle Creek, Mich.	1	1	
Bellevue Hospital, New York City	1	1	
Binghampton State Hospital, Binghampton, N. Y.	1	1	
Grace Hospital, New Haven, Conn.	1	1	
New England Hospital, Boston, Mass.	1	1	
Royal Jubilee Hospital, Kenora, Ontario, Canada	1		1
St. Joseph Mercy Hospital, Manley, Iowa	1	1	
White Plains Hospital, White Plains, N. Y.	1		1
Walla Walla Hospital, Walla Walla, Wash.	1	1	

The Board at the regular meeting held on December 4th authorized that certificates be issued to the following successful candidates:

Alvarado, Carmel M.	Mary's Help Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5023.
Anderson, Sarah Jane	Mount Zion Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5132.
Asmussen, Anna	Fabiola Hospital, Oakland, Cal. Reg. Dec. 4, 1915. Cert. No. 5063.
Bogar, Joy Rankin	St. Helena Sanitarium, Sanitarium, Cal. Reg. Dec. 4, 1915. Cert. No. 5056.
Bradley, Valeria E.	Agnew Sanitarium, San Diego, Cal. Reg. Dec. 4, 1915. Cert. No. 5116.
Battin, Viola Ora	St. Helena Sanitarium, Sanitarium, Cal. Reg. Dec. 4, 1915. Cert. No. 5058.
Buckley, Etta Gertrude	Sequoia Hospital, Eureka, Cal. Reg. Dec. 4, 1915. Cert. No. 5110.
Brooks, Elizabeth	Cottage Hospital, Santa Barbara, Cal. Reg. Dec. 4, 1915. Cert. No. 5045.
Brown, Christine Mary	Lane Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5141.
Blair, Beulah Martha	St. Luke's Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5071.
Burton, Alice Irena	Fabiola Hospital, Oakland, Cal. Reg. Dec. 4, 1915. Cert. No. 5126.
Beauchamp, Eda	Columbia Hospital, San Jose, Cal. Reg. Dec. 4, 1915. Cert. No. 5141.
Bergstrom, Selma Marion	East Bay Sanitarium, Oakland, Cal. Reg. Dec. 4, 1915. Cert. No. 5086.
Barry, Mayme Elliott	Walla Walla Hospital, Walla Walla, Washington. Reg. Dec. 4, 1915. Cert. No. 5144.
Bariga, Ethel Jane	O'Connor Sanitarium, San Jose, Cal. Reg. Dec. 4, 1915. Cert. No. 5061.
Burleigh, Helen	Ramona Hospital, San Bernardino, Cal. Reg. Dec. 4, 1915. Cert. No. 5029.
Cricks, Henrietta Frances	Angelus Hospital, Los Angeles, Cal. Reg. Dec. 4, 1915. Cert. No. 5094.
Casey, Florence Metty	Pasadena Hospital, Pasadena, Cal. Reg. Dec. 4, 1915. Cert. No. 5041.
Charlson, Jane	Children's Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5079.
Cavalli, Lydia	St. Francis Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5043.
Canon, Alice Marguerite	California Hospital, Los Angeles, Cal. Reg. Dec. 4, 1915. Cert. No. 5052.
Calvelage, Rita M.	Angelus Hospital, Los Angeles, Cal. Reg. Dec. 4, 1915. Cert. No. 5092.
Child, Helen Marjorie	East Bay Sanitarium, Oakland, Cal. Reg. Dec. 4, 1915. Cert. No. 5104.
Christensen, Georgie May	San Francisco Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5039.
Clarke, Kathryn Anastasia	Mary's Help Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5106.
Dunlop, Agnes Emmeline	Alameda Sanatorium, Alameda, Cal. Reg. Dec. 4, 1915. Cert. No. 5103.
Day, Caroline Frances	German Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5014.
Drury, Elizabeth M.	St. Francis Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5108.

Doyle, Nina	Buena Vista Sanatorium, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5078.
Driscoll, Celia	St. Joseph Mercy Hospital, Waverly, Iowa. Reg. Dec. 4, 1915. Cert. No. 5022.
Edwards, Dorothy Florence	St. Francis Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5081.
Eklund, Blenda Ellena	Angelus Hospital, Los Angeles, Cal. Reg. Dec. 4, 1915. Cert. No. 5093.
Erbal, Gertrude	Pacific Hospital, Los Angeles, Cal. Reg. Dec. 4, 1915. Cert. No. 5050.
Forge, Jessie Winnifred	New England Hospital, Boston, Mass. Reg. Dec. 4, 1915. Cert. No. 5147.
Fielding, Sylvia Berta	Hahnemann Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5015.
Filson, Agnes K.	Angelus Hospital, Los Angeles, Cal. Reg. Dec. 4, 1915. Cert. No. 5089.
Frolli, Agnes Innocence	Buena Vista Sanitarium, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5085.
Fahey, Katherine	Children's Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5134.
Gaylord, Cora Alice	Pasadena Hospital, Pasadena, Cal. Reg. Dec. 4, 1915. Cert. No. 5097.
Harmon, Hannah	Sequoia Hospital, Eureka, Cal. Reg. Dec. 4, 1915. Cert. No. 5109.
Hubback, Clare	Hahnemann Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5100.
Hanrahan, Maybelle K.	St. Joseph's Hospital, Stockton, Cal. Reg. Dec. 4, 1915. Cert. No. 5030.
Harms, Viola	St. Francis Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5033.
Ireland, Alta	St. Francis Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5121.
Isaacs, Emma	St. Luke's Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5069.
Jolliffe, Gladys	California Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5038.
Johnson, Mayfred Derby	St. Lawrence St. Hospital, Ogdensburg, N. Y. Reg. Dec. 4, 1915. Cert. No. 5148.
Jagermann, Alma Marie	Cottage Hospital, Santa Barbara, Cal. Reg. Dec. 4, 1915. Cert. No. 5040.
Jenkins, Alta Blanche	California Hospital, Los Angeles, Cal. Reg. Dec. 4, 1915. Cert. No. 5018.
Kaigler, Theresa E. Schreier	Grace Hospital, New Haven, Conn. Reg. Dec. 4, 1915. Cert. No. 5101.
King, Grace May	University of California Hospital, San Francisco. Reg. Dec. 4, 1915. Cert. No. 5114.
Kennedy, Belina Beatrice	Lane Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5145.
Kenyon, Nora	Children's Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5076.
Koebig, Julia Elise	Good Samaritan Hospital, Los Angeles, Cal. Reg. Dec. 4, 1915. Cert. No. 5074.
Kling, Hannah Christine	California Hospital, Los Angeles, Cal. Reg. Dec. 4, 1915. Cert. No. 5075.
Knapp, Ina J.	Children's Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5135.
Kirschbaum, Caroline Vivian	St. Mary's Hospital, San Francisco, Cal. Reg. Dec. 4, 1915. Cert. No. 5117.

Kozina, Mollie Frances-----Santa Ana Hospital, Santa Ana, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5127.
 Lumley, Isabelle Elizabeth-----St. Helena Sanitarium, Sanitarium, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5059.
 Leary, Mary Frances -----Mary's Help Hospital, San Francisco, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5115.
 McAuley, Frances J.-----St. Mary's Hospital, San Francisco, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5118.
 Miller, Emma McEwen-----Good Samaritan Hospital, Los Angeles, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5099.
 Mills, Kathryn Jane -----Fabiola Hospital, Oakland, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5028.
 McMahon, Marguerite Eleanor-----Columbia Hospital, San Jose, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5140.
 Miller, Wilhelmina -----Burnett Sanitarium, Fresno, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5130.
 McDonald, Sarah -----Battle Creek Sanitarium, Battle Creek, Mich.
 Reg. Dec. 4, 1915. Cert. No. 5020.
 McGinity, Ramona -----County Hospital, Sacramento, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5066.
 Melville, Viola Imelda-----O'Connor Sanitarium, San Jose, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5095.
 Martins, Edith Victoria-----Angelus Hospital, Los Angeles, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5090.
 Mazza, Mary Eugenia -----French Hospital, San Francisco, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5025.
 Mauchle, Hermina Mary-----Santa Clara County Hospital, San Jose, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5080.
 McClure, Harriet Elizabeth-----University of California Hospital, San Francisco.
 Reg. Dec. 4, 1915. Cert. No. 5073.
 Naylor, Louise Hall-----St. Luke's Hospital, San Francisco, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5072.
 Nicholson, Maud Anne-----Burnett Sanitarium, Fresno, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5142.
 Palmer, Frema -----Hahnemann Hospital, San Francisco, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5024.
 Paulson, Sara Elsie-----Lane Hospital, San Francisco, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5021.
 Paessler, Cora Augusta-----White Hospital, Sacramento, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5035.
 Pardee, Prudie C. -----O'Connor Sanitarium, San Jose, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5156.
 Peck, Alma Antoinette -----St. Francis Hospital, San Francisco, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5123.
 Rossen, Bernice Eloise -----East Bay Sanitarium, Oakland, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5083.
 Rasmussen, Marie -----Agnew Sanitarium, San Diego, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5046.
 Rinn, Martha Catherine -----Dameron Hospital, Stockton, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5026.
 Rock, Elizabeth Rose -----City and County Hospital, San Francisco, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5049.
 Rogan, Gertrude M.-----Los Angeles Infirmary, Los Angeles, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5112.
 Rees, Hazel -----County Hospital, Sacramento, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5064.
 Ream, Clennie E.-----St. Helena Sanitarium, Sanitarium, Cal.
 Reg. Dec. 4, 1915. Cert. No. 5057.

Rice, Ella Muriel	-----	St. Francis Hospital, San Francisco, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5107.
Reed, Lotta E.	-----	St. Francis Hospital, San Francisco, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5122.
Seafert, Nettie May	-----	Cottage Hospital, Santa Barbara, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5098.
Schortgen, Stella May	-----	University of California Hospital, San Francisco.
		Reg. Dec. 4, 1915. Cert. No. 5062.
Short, Bess	-----	Mount Zion Hospital, San Francisco, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5133.
Strain, May	-----	Angelus Hospital, Los Angeles, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5091.
Stanley, Mary Emma	-----	Lane Hospital, San Francisco, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5051.
Smith, Mattie Maud	-----	Santa Ana Hospital, Santa Ana, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5128.
Smith, Harriet Elizabeth	-----	Angelus Hospital, Los Angeles, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5088.
Smith, Lillian Stevens	-----	Binghampton State Hospital, Binghampton, N. Y.
		Reg. Dec. 4, 1915. Cert. No. 5129.
Tillotson, Hazel Genevieve	-----	City and County Hospital, San Francisco, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5044.
Titus, Shirley Carlew	-----	St. Luke's Hospital, San Francisco, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5070.
Weiser, Lillian Josephine	-----	East Bay Sanitarium, Oakland, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5065.
Winters, Gertrude Alma	-----	St. Francis Hospital, San Francisco, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5060.
Warren, Nan May	-----	San Joaquin County Hospital, French Camp, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5124.
Whitman, Florence E.	-----	Cottage Hospital, Santa Barbara, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5019.
Wilson, Hazel Margaret	-----	Children's Hospital, San Francisco, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5105.
Zarpentine, Glasgow Margaret	-----	Children's Hospital, San Francisco, Cal.
		Reg. Dec. 4, 1915. Cert. No. 5077.
		ON CERTIFICATE.
Griep, Lena A.	-----	Illinois Training School, Chicago, Ill.
		Reg. Dec. 4, 1915. Cert. No. 5157.

SPECIAL NOTICE OF EXAMINATIONS.

Through the co-operation of the State Civil Service Commission and by action of the State Board of Health, a permanent arrangement governing nurses' examinations has become effective. The advantages of this co-operation are:

1. To enable candidates to take one written examination for—
 - (a) Certificate as Registered Nurse;
 - (b) Civil Service appointments.
2. To hold examinations simultaneously in Sacramento, San Francisco and Los Angeles, in order that candidates may take the examination without loss of time and cost of a long journey to place of examination.
3. To furnish a substantial list of nurses qualified by examination for Civil Service Boards.

4. To establish in the State a central bureau, namely the Bureau of Registration of Nurses, where examinations given to nurses may be handled and examination papers corrected.

Confirming this arrangement the following resolution was adopted by the State Board of Health at the regular meeting held December 4, 1915:

“Resolved, That after January 1, 1917, examinations for registration as registered nurses be held in April and October of each year simultaneously in Sacramento, San Francisco and Los Angeles in co-operation with the State Civil Service Commission, under the terms of a resolution of this Board passed on October 2, 1915, and the communication of Mr. J. M. Hunter of the State Civil Service Commission, dated December 3, 1915; and

Be it further resolved, That the examination announced for February and June, 1916, and an additional examination in October of that year, be held in the same manner.”

In accordance with this resolution the examinations scheduled by the State Board of Health to be held in Sacramento, February 8 and 9 and June 13 and 14, 1916, will be held simultaneously in Sacramento, San Francisco and Los Angeles, on the same days.

All applicants for examination for certificate as registered nurse will apply to the Bureau of Registration of Nurses not later than January 28th for the February examination.

Applicants applying for the above examination and desiring State Civil Service or Los Angeles County Civil Service appointments must file application with the State Civil Service Commission or the Los Angeles County Civil Service Commission not later than February 1, 1916.

All nurses who have been registered in the State of California without examination, desiring State Civil Service or Los Angeles County Civil Service appointments, must make application to these Civil Service Departments not later than February 1, 1916.

Applicants desiring Civil Service appointments will be subject to an oral examination by the Civil Service Commission, when it is ascertained that they have passed the written examination.

For information apply to—

Bureau of Registration of Nurses, State Board of Health, Sacramento, California;

State Civil Service Commission, Sacramento, California;

Los Angeles County Civil Service Commission, Hall of Records, Los Angeles, California.

LIST OF COUNTY AND CITY HEALTH OFFICERS.

Alameda County—

Dr. C. L. McKown	Niles
Alameda	Dr. A. Hieronymus
Albany	Dr. F. R. Woolsey
Berkeley	Dr. J. J. Benton
Emeryville	Dr. A. T. Drennan
Hayward	Dr. F. W. Browning
Livermore	Dr. J. K. Warner
Oakland	Dr. R. M. Higgins
Piedmont	George T. Burtchaell
Pleasanton	Dr. J. Hal Cope
San Leandro	Dr. Luther Michael

Alpine County—

Mr. Fred S. Dunlap—Markleeville

Amador County—

Dr. G. L. Lynch	Amador City
Jackson	George Hambric
Sutter Creek	W. A. Burres

Butte County—

Dr. L. L. Thompson—Gridley

Biggs	
Chico	W. H. Marshall
Gridley	Dr. L. L. Thompson
Oroville	Dr. W. F. Gates

Calaveras County—

Dr. George F. Pache	Angels Camp
Angels Camp	Dr. E. W. Weirich

Colusa County—

Dr. C. A. Poage	Colusa
Colusa	Dr. C. A. Poage

Contra Costa County—

Dr. W. S. George	Antioch
Antioch	Dr. W. S. George
Concord	Dr. F. F. Neff
Hercules	Dr. M. L. Fernandez
Martinez	Dr. Edwin Merrithew
Pinole	Dr. M. L. Fernandez
Pittsburg	Dr. F. S. Gregory
Richmond	Dr. Chas. R. Blake
Walnut Creek	Dr. C. R. Leech

Del Norte County—

Dr. E. M. Fine	Crescent City
Crescent City	Dr. E. M. Fine

El Dorado County—

Dr. L. M. Leisenring	Placerville
Placerville	P. J. Hall

Fresno County—

Dr. G. L. Long	Fresno
Clovis	Dr. M. S. McMurtry
Coalinga	Dr. C. W. Hutchison
Firebaugh	Dr. H. J. Greven
Fowler	
Fresno	Dr. A. H. Sweeney
Kingsburg	Dr. J. A. Gillespie
Reedley	Dr. J. D. Hare
Sanger	Dr. Thos. F. Madden
Selma	Dr. O. H. Steinwand

Glenn County—

Dr. F. M. Lawson	Willows
Orland	Dr. D. L. Martin
Willows	Dr. F. X. Tremblay

Humboldt County—

Dr. Carl T. Wallace	Eureka
Arcata	Dr. G. W. McKinnon
Blue Lake	
Eureka	Dr. L. A. Wing
Ferndale	Dr. J. A. Lane
Fortuna	Dr. Orville Rockwell

Imperial County—

Dr. F. H. Carter	El Centro
Brawley	Dr. Eugene Le Baron
Calexico	H. C. Norgaard
El Centro	Dr. F. H. Carter
Holtville	J. C. Nale
Imperial	Dr. C. E. Standlee

Inyo County—

Dr. I. J. Woodin	Independence
Bishop	Dr. C. E. Turner

Kern County—

Dr. C. A. Morris	Bakersfield
Bakersfield	Dr. P. J. Cuneo
Delano	
Maricopa	Dr. H. N. Taylor
McKittrick	Dr. W. H. Cook
Taft	Dr. F. C. Galehouse
Tehachapi	Dr. N. J. Brown, Jr.

Kings County—

Dr. C. L. Scott	Hanford
Corcoran	Floyd Burns
Hanford	Dr. C. L. Scott
Lemoore	Dr. W. P. Byron

Lake County—

Dr. W. E. Upton	Kelseyville
Lakeport	J. G. West

Lassen County—

Dr. W. E. Dozier	Susanville
Susanville	Dr. E. S. Drucks

Los Angeles County—

Dr. J. L. Pomeroy	Los Angeles
Alhambra	Dr. F. E. Corey
Arcadia	Dr. Chas. D. Gaylord
Avalon	Dr. J. J. Peckham
Azusa	Dr. L. W. Atkinson
Beverly Hills	Dr. Lowell G. Frost
Burbank	Dr. E. H. Thompson
Claremont	Dr. F. W. Thomas
Compton	J. W. Stone
Covina	Dr. J. D. Reed
Eagle Rock	Dr. C. H. Phinney
El Monte	Dr. S. L. Corpe
Glendale	Dr. R. E. Chase
Glendora	
Hermosa Beach	B. F. Brown
Huntington Park	Dr. W. Thompson
Inglewood	Dr. H. A. Putnam
Long Beach	Dr. R. L. Taylor
Lordsburg	Dr. J. E. Hubble
Los Angeles	Dr. L. M. Powers
Manhattan Beach	Llewellyn Price
Monrovia	Fred S. Whitcomb
Pasadena	Dr. Stanley P. Black
Pomona	Dr. N. J. Rice
Redondo Beach	Dr. D. R. Hancock
San Fernando	Dr. Benj. B. Ward
San Gabriel	Dr. Ruth Purcell
San Marino	
Santa Monica	Dr. Chas. G. Shipman
Sawtelle	Dr. A. B. Hromadka
Sierra Madre	Dr. R. H. Mackerras
South Pasadena	Dr. C. F. Metcalf
Tropico	Dr. Wm. C. Mabry
Venice	Dr. W. M. Kendall
Vernon	Dr. O. R. Stafford
Watts	Dr. E. J. Riche
Whittier	Dr. W. H. Stokes

Madera County—

Dr. L. St. John Hely	Madera
Madera	Dr. L. St. John Hely

Marin County—

Dr. J. H. Kuser	Novato
Belvedere	Dr. Florence Scott
Larkspur	Dr. J. E. McCue
Mill Valley	James V. Chase
Ross	Dr. Harry O. Hund
San Anselmo	Dr. O. W. Jones
San Rafael	Dr. W. J. Stone
Sausalito	Dr. A. H. Mays

Mariposa County—

Dr. J. M. Hicks	Mariposa
-----------------	----------

Mendocino County—

Dr. Judson Liftchild	Ukiah
Fort Bragg	Dr. L. C. Gregory
Point Arena	N. A. McCallum
Potter Valley	W. T. Eddie
Ukiah	Dr. J. Liftchild
Willits	Dr. F. C. Gunn